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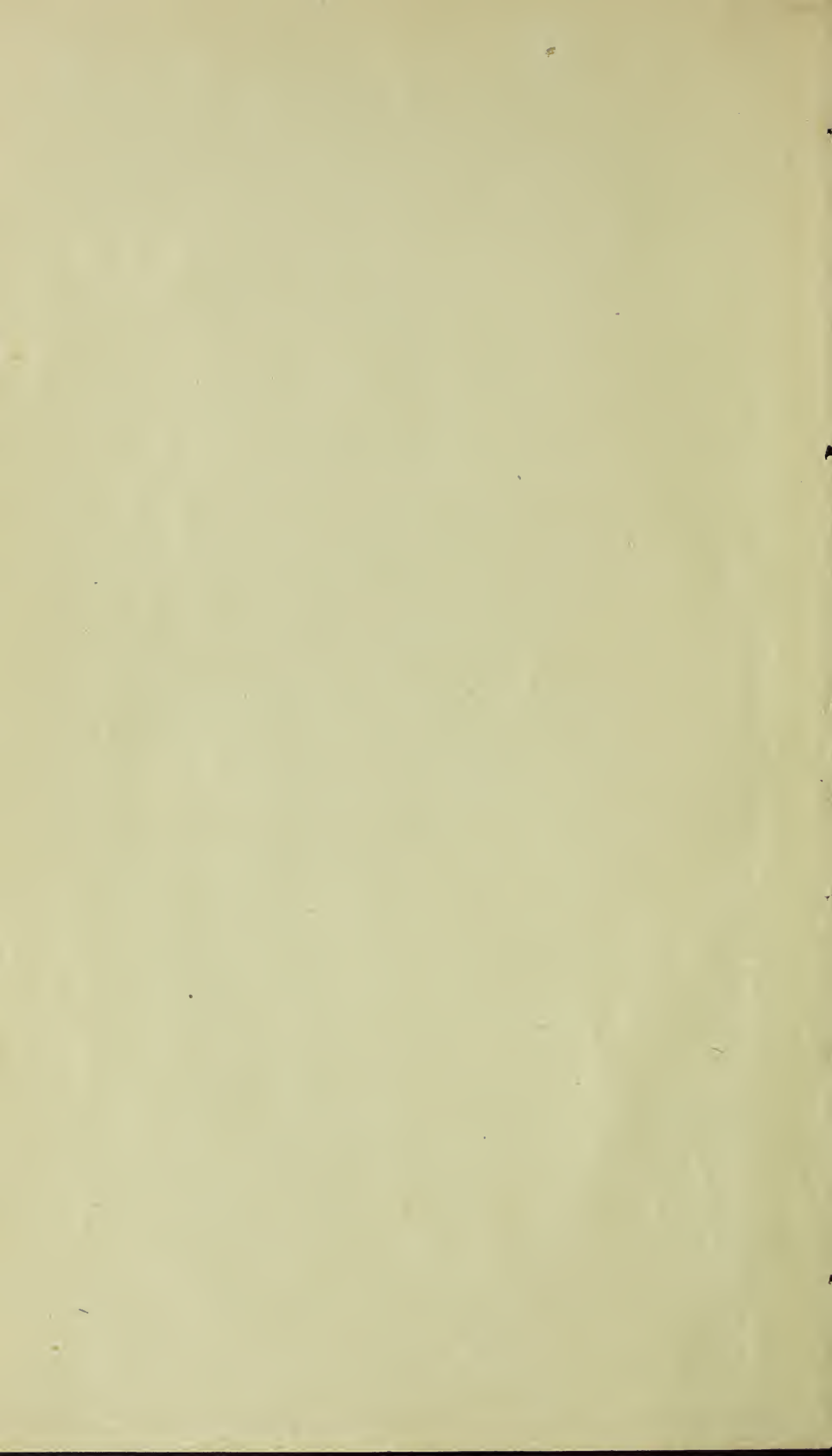
DEPARTMENT OF AGRICULTURE.
SPECIAL REPORT—No. 63.

THE
GRASSES OF THE UNITED STATES:
BEING
A SYNOPSIS OF THE TRIBES AND GENERA,
WITH
DESCRIPTIONS OF THE GENERA,
AND
A LIST OF THE SPECIES.

PREPARED BY
Dr. GEO. VASEY,
BOTANIST OF THE DEPARTMENT OF AGRICULTURE.

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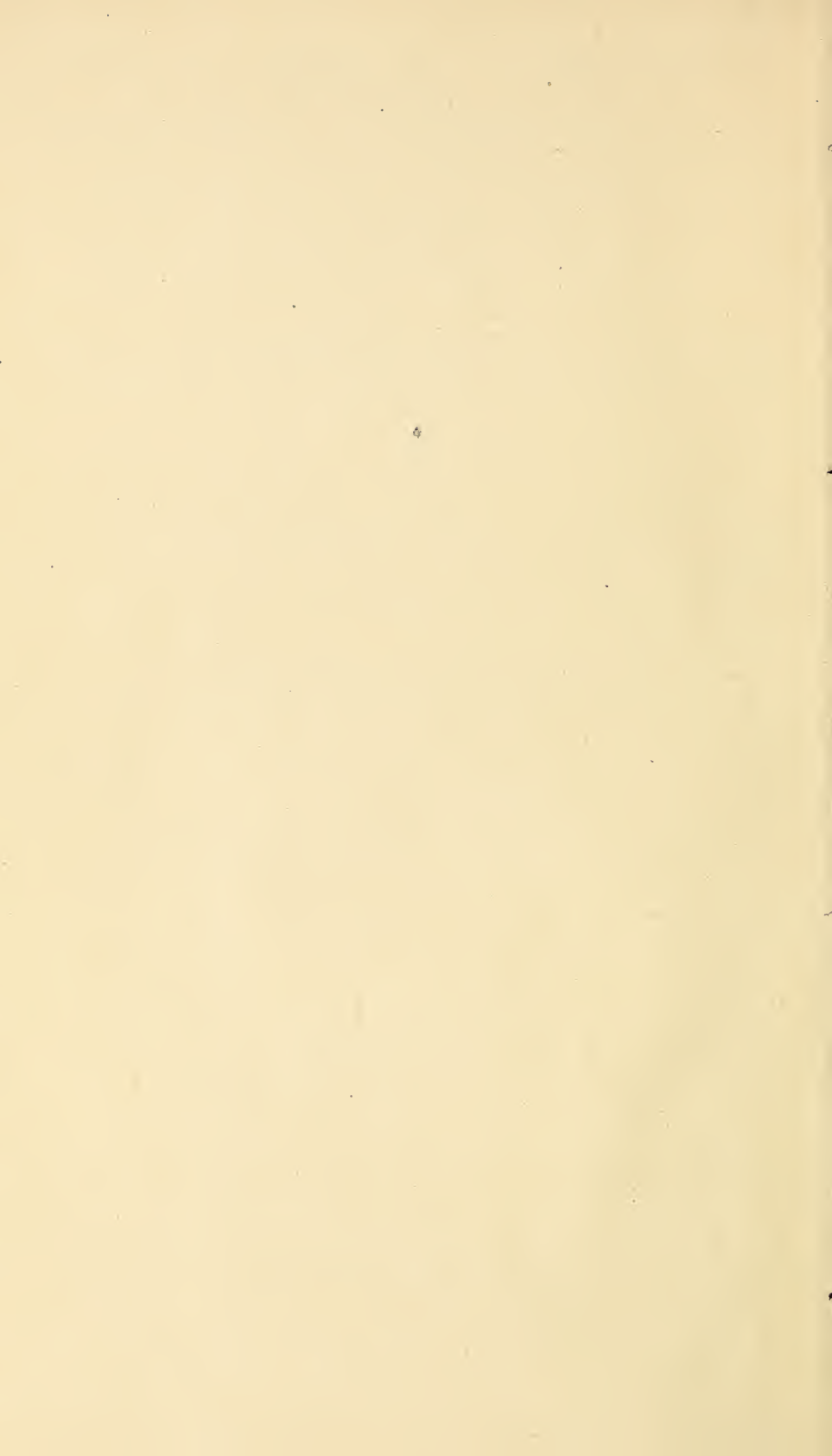
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THE GRASSES OF THE UNITED STATES.

INTRODUCTION.

Many inquiries have been made for some work giving an account of the Grasses of the United States, especially of those growing west of the Mississippi River. Descriptions of these grasses are chiefly to be found in various reports of the Government, Pacific Railroad Survey, Geological Surveys, &c., most of which are now inaccessible to the ordinary reader.

The present paper is an attempt to give a systematic synopsis of our grasses so far as known at the present time, with descriptions of the genera and a list of the species. Our knowledge of some species is yet imperfect, and one object of this paper is to awaken such interest in the subject as may lead to further study and investigation of the same.

The synopsis of the tribes and genera is chiefly a translation from the recently published "Genera Plantarum" of Messrs. Bentham and Hooker. The characters have been drawn up very briefly, but, it is hoped, with sufficient fullness to lead to the intended result. In drawing the characters of the genera the best authors have been consulted, a careful examination of specimens has been made, and the nomenclature conformed to the most recent views of the floral structure. The list includes, doubtfully, some species of which we have imperfect information, and which may have to be excluded or changed in the future.

It is impossible to describe and classify so large a number of objects except by the use of technical words. Any person seeking a clear and accurate knowledge of the subject will find it necessary to become acquainted with the technical language which is universally employed in science.

SYNOPSIS OF THE TRIBES OF NORTH AMERICAN GRASSES.

SERIES 1.—PANICACEÆ.

Spikelets articulated with the pedicel below the outer glumes, and consisting of one fertile terminal flower, and usually an inferior one which is male or sterile.

TRIBE 1.—PANICEÆ.

Fertile spikelets perfect, rarely by abortion unisexual (monœcious or diœcious), spicate or paniculate. Outer glumes usually two, rarely one or none, flowering glume indurated in fruit, or at least more rigid than the outer ones, unawned.

TRIBE 2.—MAYDEÆ.

Spikelets unisexual; the male flowers terminal, spicate or paniculate; the female ones below, spicate, disarticulating (except in *Zea*) with the joints of the rhachis.

TRIBE 3.—ORYZEÆ.

Spikelets perfect, or rarely unisexual, paniculate or spicate. Outer glumes usually minute or absent, the flower apparently inclosed by two *one-nerved* glumes, the upper of which is generally considered a palet.

TRIBE 4.—TRISTEGINEÆ.

Spikelets perfect, paniculate or sparsely fasciculate. Glumes three or four, the two or three inferior ones empty, membranaceous; the terminal or flowering one awnless or often terminated with a geniculate awn, and with a hyaline or thinly membranaceous palet.

TRIBE 5.—ZOYSIÆ.

Spikelets usually perfect, or some of them imperfect, articulated singly or in fascicles with the inarticulate rhachis of the simple spike; flowering glumes membranaceous; generally the outer or empty ones smaller and hyaline.

TRIBE 6.—ANDROPOGONEÆ.

Spikelets arranged along the rhachis of the spike or the branches of the panicle most commonly in twos, or the terminal ones in threes, homogamous or heterogamous in every pair. Flowering glume smaller than the empty ones, hyaline, often bearded.

SERIES 2.—POACEÆ.

Spikelets usually not articulated with the pedicel below the glumes; the rhachis continuous above the persistent lower glumes, and disarticulating with the flowers or persisting. The spikelets consist rarely of a single flower, or of one perfect and one or two inferior imperfect ones, or of from two to many flowers with the upper ones or some of them imperfect; the rhachis sometimes produced beyond the upper flower as a stipe-like pedicel or as an imperfect flower. The lower glumes are rarely depauperate or wanting.

TRIBE 7.—PHALARIDEÆ.

Flower perfect, solitary and terminal; glumes one-nerved or keeled. (Same as *Oryzæ*, with the addition of two empty glumes below the joint.) In *Phalaris* the third and fourth glumes are reduced to mere pedicels or bristles.

TRIBE 8.—AGROSTIDEÆ.

Spikelet perfect, one-flowered; rhachis often prolonged beyond the flower into a bristle or stipe.

TRIBE 9.—AVENEÆ.

Spikelets two-flowered, rarely many-flowered, often paniculate. Flowering glumes usually provided with a dorsal or sometimes a terminal awn, or awnless in some equally two-flowered genera.

TRIBE 10.—CHLORIDEÆ.

Spikelets one to many flowered, sessile and secund in two rows along the rhachis of one-sided spikes.

TRIBE 11.—FESTUCACEÆ.

Spikelets two to many flowered, variously paniculate or rarely racemose. Flowering glumes awnless, or terminated by one to many awns.

TRIBE 12.—HORDEACEÆ.

Spikelets one to many flowered, sessile on the teeth or excavations of the rhachis of the simple spike.

TRIBE 13.—BAMBUSEÆ.

Tall grasses, often woody, at least at the base. Leaves flat, generally articulated with the sheath, spikelets one to many flowered; stamens 3, 4, or many.

SYNOPSIS OF THE GENERA.

TRIBE 1.—PANICACEÆ.

GROUP 1.—Branches of the simple panicle spike-like, or variously branched, not produced beyond the spikelets.

Genera: 1. *Reimaria*; 2. *Paspalum*; 3. *Anthænantia*; 4. *Amphicarpum*; 5. *Eriochloa*; 6. *Beckmannia*; 7. *Panicum*; 8. *Oplismenus*; 9. *Setaria*.

GROUP 2.—Spikes or racemes simple, solitary or rarely paniculate. Spikelets surrounded by or intermixed with abortive branches of the panicle, forming a lobed or bristly involucre, which is deciduous with the spikelet.

Genera: 1. *Cenchrus*; 2. *Pennisetum*.

GROUP 3.—Spikes one to many on a common peduncle, rhachis produced beyond the uppermost spikelet.

Genera : 1. *Spartina*; 2. *Stenotaphrum*.

GROUP 4.—

Anomalous genera : 1. *Pharus*.

TRIBE 2.—MAYDEÆ.

Genera : 1. *Coix*; 2. *Tripsacum*.

TRIBE 3.—ORYZEÆ.

Genera : 1. *Hydrochloa*; 2. *Zizania*; 3. *Luziola*; 4. *Leersia*.

TRIBE 4.—TRISTEGINEÆ.

Genera : 1. *Thurberia*.

TRIBE 5.—ZOYSIÆ.

Genera : 1. *Hilaria*; 2. *Aegopogon*; 3. *Tragus*.

TRIBE 6.—ANDROPOGONEÆ.

GROUP 1.—Spikelets paniculate.

Genera : 1. *Imperata*; 2. *Erianthus*.

GROUP 2.—Spikelets sessile in the excavations of the joints of the spikes.

Genera : 1. *Elionurus*; 2. *Rottbœllia*; 3. *Manisuris*.

GROUP 3.—Spikelets (one of the pair at least, pediceled), spicate or racemose.

Genera : 1. *Ischæmum*; 2. *Heteropogon*; 3. *Andropogon*; 4. *Chrysopogon*; 5. *Sorghum*.

TRIBE 7.—PHALARIDEÆ.

GROUP 1.—Rhachis articulated above the outer glumes.

Genera : 1. *Phalaris*; 2. *Anthoxanthum*; 3. *Hierochloa*.

GROUP 2.—Rhachis articulated below the spikelet.

Genera : 1. *Alopecurus*.

TRIBE 8.—AGROSTIDEÆ.

SUBTRIBE 1.—STIPEÆ.

Spikelets paniculate. Rhachis not produced beyond the flower; beard of the flowering glume terminal.

Genera : 1. *Aristida*; 2. *Stipa*; 3. *Oryzopsis*; 4. *Milium*; 5. *Muhlenbergia*; 6. *Brachyelytrum*.

SUBTRIBE 2.—PHLEOIDEÆ.

Spikelets in a dense spike-like or ovoid panicle. Rhachis produced beyond the flower in a bristle, or naked. Flowering glumes awnless, or produced in one to three straight bristles.

Genera: 1. *Lycurus*; 2. *Heleochoa*; 3. *Phleum*.

SUBTRIBE 3.—SPOROBOLÆ.

Spikelets usually small, loosely spicate or variously paniculate. Rhachis not produced beyond the flower; glumes unawned, or the flowering glume rarely produced in a short straight beard.

Genera: 1. *Coleanthus*; 2. *Phippsia*; 3. *Sporobolus*.

SUBTRIBE 4.—EUAGROSTÆ.

Spikelets generally small; variously paniculate. Flowering glume usually with a more or less twisted dorsal awn; rarely mucronate or awnless.

GROUP 1.—Rhachilla not produced beyond the flower.

Genera: 1. *Epicampes*; 2. *Agrostis*; 3. *Polypogon*; 4. *Arctagrostis*; 5. *Cinna*.

GROUP 2.—Rhachilla produced beyond the flower in a bristle which may be glabrous or most frequently hairy.

Genera: 1. *Gastridium*; 2. *Apera*; 3. *Deyenia*; 4. *Ammophila*.

TRIBE 9.—AVENÆ.

SUBTRIBE AIREÆ.

Spikelets two-flowered, paniculate or rarely spicate; not produced beyond the flowers; flowering glumes awnless or rarely with a thin short awn.

Genera: 1. *Aira*.

SUBTRIBE EUAVENÆ.

Spikelets two to many flowered; rhachilla more or less produced beyond the flowers; flowering glumes commonly with a dorsal or terminal geniculate awn.

Genera: 1. *Corynephorus*; 2. *Deschampsia*; 3. *Holcus*; 4. *Trisetum*; 5. *Avena*; 6. *Arrhenatherum*; 7. *Danthonia*.

TRIBE 10.—CHLORIDÆ.

GROUP 1.—One or rarely two fertile flowers in the spikelet.

Genera: 1. *Cynodon*; 2. *Ctenium*; 3. *Chloris*; 4. *Trichloris*; 5. *Gymnopogon*; 6. *Schedonnardus*; 7. *Bouteloua*.

GROUP 2.—Two to many fertile flowers in each spikelet.

Genera: 1. *Eleusine*; 2. *Leptochloa*; 3. *Buchloë*.

TRIBE 11.—FESTUCACEÆ.

SUBTRIBE 1.—PAPPOPHOREÆ.

Spikelets usually few-flowered; flowering glumes three to many awned.

Genera: 1. Pappophorum; 2. Cottea.

SUBTRIBE 2.—TRIODIÆ.

Spikelets many-flowered, rarely one or two flowered, rhachilla glabrous or short pilose; glumes one to three nerved, or rarely many-nerved, three-toothed, three-divided, or three-awned.

Genera: 1. Triodia; 2. Diplachne; 3. Triplasis; 4. Eremochloa.

SUBTRIBE 3.—ARUNDINÆ.

Tall grasses with a many-flowered panicle; spikelets two to many flowered; rhachilla or the flowering glumes generally long pilose; flowering glumes three-toothed, or one to three awned.

Genera: 1. Arundo; 2. Phragmites.

SUBTRIBE 4.—SESLERIÆ.

Spikelets capitate, subspicate, or appressed in a spike-like panicle; flowering glumes three to five nerved.

Genera: 1. Monanthochloe; 2. Munroa; 3. Lamarckia.

SUBTRIBE 5.—ERAGROSTÆ.

Spikelets variously paniculate; flowering glumes mostly three-nerved, rarely one-nerved.

Genera: 1. Koeleria; 2. Eatonia; 3. Dissanthelium; 4. Catabrosa; 5. Eragrostis.

SUBTRIBE 6.—MELICEÆ.

Flowering glumes three to five or many nerved, more or less involute, the upper two or more empty or imperfect.

Genera: 1. Melica; 2. Diarrhena; 3. Streptogyne.

SUBTRIBE 7.—EUFESTUCEÆ.

Flowering glumes five to many nerved, the upper one empty, style short, stigmas plumose; leaves generally narrow, without transverse veins.

Genera: 1. Pleuropogon; 2. Uniola; 3. Distichlis; 4. Dactylis; 5. Briza; 6. Poa; 6. Graphephorum; 8. Glyceria; 9. Festuca; 10. Bromus.

TRIBE 12.—HORDEACEÆ.

SUBTRIBE 1.—TRITICEÆ.

Spikelets solitary at the nodes, three to many flowered, rarely two-flowered; spike usually stout.

Genera: 1. Lolium; 2. Agropyrum.

SUBTRIBE 2.—LEPTURÆ.

Spikelets one to two flowered, solitary at the nodes; spikes slender.

Genera : 1. *Lepturus*.

SUBTRIBE 3.—ELYMÆ.

Spikelets two to many at each joint of the rhachis. Spike generally stout.

Genera : 1. *Hordeum*; 2. *Elymus*; 3. *Asprella*.

TRIBE 13.—BAMBUSEÆ.

Genera : 1. *Arundinaria*.

DESCRIPTION OF THE GENERA.

REIMARIA, Flugge.

Spikelets acuminate, in unilateral sessile spikes, with one perfect terminal flower and one exterior empty glume, which is membranaceous, three to five nerved, acute, about equaling the fertile glume. Fertile glume and palet indurated or membranaceous, finely punctulate. Stamens 2, styles 2, distinct to the base. Stigmas long and plumose. Culms ascending, diffusely branched at the base.

R. oligostachya, *Munro*. Florida.

This species varies from the character of the genus in usually having a second outer glume either fully or imperfectly developed in a portion of the spikelets of each spike.

R. acuta occurs in Cuba, and will probably also be found in Southern Florida.

PASPALUM, Linn.

Spikelets obtuse or rarely short acuminate, each with one terminal perfect flower, in one or two rows along one side of the solitary or paniculate flattened spikes. Glumes 3 (or rarely 2, the lower one wanting), the two outer ones membranous, equal, or in a few species the outer one smaller or disappearing; the flowering glume more or less concave, becoming indurated, embracing the shorter palet, which is of the same texture. Stamens 3, styles 2, distinct to the base. Stigmas plumose. Spikes simple, terminal, or subdigitate, or approximate or scattered along the general peduncle; spreading or reflexed.

1. *P. cæspitosum*, *Flugge*. (*P. Blodgettii*, *Chap.*). Florida.
2. *P. compressum*, var. *imberbe*, *Munro* (*P. platycaule*, *Poir.*). Florida, Georgia, and westward to Texas.
3. *P. conjugatum*, *Berg.* Mississippi.
4. *P. digitaria*, *Poir.* Florida and the Gulf States.

5. *P. distichum*, *L.* (*P. vaginatum*, *Sw.*). South and West.
P. distichum, var. *monstrosa*, *Munro*. Florida.
6. *P. dilitatum*, *Poir* (*P. ovatum*, *Trin.*). Virginia to the Gulf States.
7. *P. elatum*, *Richard* in *Herb. Paris.* Texas.
8. *P. Floridanum*, *Mx.* Maryland to Florida and westward.
9. *P. fluitans*, *Walt.* Southern States.
10. *P. gigauteum*, *Bald.* Florida.
11. *P. læve*, *Mx.* Common eastward and southward.
12. *P. lentiferum*, *Lam.* (*P. præcox*, *Walt.*). Southern States.
13. *P. lentiginosum*, *Presl.* Texas.
14. *P. lividum*, *Trin.* Texas and Mexican border.
15. *P. notatum*, *Flugge.* Louisiana.
16. *P. plicatulum*, *Mx.* (*P. undulatum*, *Poir*). South and West.
17. *P. rectum*, *Nees.* Florida.
18. *P. racemulosum*, *Nutt.* Florida and Gulf States.
19. *P. reimarioides*, *Chap.* Florida.
20. *P. remotum*, *Remy* (*P. pubiflorum*, *Rupt.*). Texas.
21. *P. setaceum*, *Mx.* Common.
P. setaceum, var. *ciliatifolium* (*P. ciliatifolium*, *Ell.*). South.
22. *P. virgatum* *L.*, var. *platyoxon*, *Doell.* South Carolina.
23. *P. Walterianum*, *Schultz.* Southern States.

ANTHÆNANTIA, *Beauv.*

Spikelets loosely racemed on the erect branches of the contracted panicle, composed of one terminal perfect flower, and one lower male or neuter one, its glume like the outer empty one hairy—there being thus two flowering glumes and an empty one. Panicle oblong, lax, the branches slender, many-flowered. Flowering glume of the perfect flower rigid-membranaceous, not indurated.

1. *A. rufa*, *Benth.* (*Panicum rufum*, *Kth.* *Aulaxanthus rufus*, *Ell.*). Southern States.
2. *A. villosa*, *Beauv.* (*Panicum ignoratum*, *Kth.* *Aulaxanthus ciliatus*, *Ell.*). Southern States.

AMPHICARPUM, *Kth.*

Spikelets of two kinds, those of the simple terminal panicle perfect but not fertile; the fertile ones mostly borne at the ends of subterranean runner-like pedicels, these flowers larger than the others. The spikelets consist of one terminal flower, two nearly equal empty outer glumes, and, frequently, the rudiment of another flower.

1. *A. Purshii*, *Kth.* (*Millium amphicarpum*, *Pursh.*). New Jersey.
2. *A. Floridanum*, *Chap.* Florida.

ERIOCHLOA, *H. B. K.*

Spikelets with one perfect flower and two empty, hairy, nearly equal outer glumes, with a peculiar cup-like or annular swelling of the pedicel

just below the spikelet. The spikelets are nearly sessile, in one or two rows along one side of the slender branches of a simple panicle. The perfect flower much as in *Paspalum*, the flowering glume obtuse or sometimes mucronate.

1. *E. punctata*, *Hamil.* (*Millium punctatum*, *L.* *Paspalum punctatum*, *Flugge*). Texas.
E. punctata, var. *mollis* (*E. mollis*, *Kth.* *Panicum molle*, *Mx.*). Florida.
2. *E. sericea*, *Munro.* Texas.
3. *E. annulata*, *Kth.* (*Paspalum annulatum*, *Kth.*). Florida.
4. *E. grandiflora*, *Trin.* (*Helopus grandiflorus*, *Trin.*). Arizona.

BECKMANNIA, *Host.*

Spikelets subsessile, crowded in two rows upon the short simple or compound branches of the long, narrow panicle; consisting of two perfect flowers, the terminal one only fertile (or in American specimens the lower flower is suppressed), and two subcoriaceous, obovate or boat-shape, compressed and inflated empty glumes. The glume of the perfect flower or flowers is lanceolate, acute or acuminate, and of rather thinner texture than the empty glumes.

1. *B. eruceiformis*, *Host.* Mountain regions west of the Mississippi.

PANICUM, *Linn.*

Spikelets with one perfect terminal flower, and usually a second (male or rudimentary) one below. Outer empty glumes two, one of which is smaller than the other, often very small, or rarely wanting. The glume of the terminal flower with its palet is usually of a coriaceous texture and obtuse or obtusish. Inflorescence spicate or paniculate.

1. *P. agrostoides*, *Spreng.* Common.
2. *P. amarum*, *Ell.* Atlantic coast.
3. *P. anceps*, *Linn.* Common.
P. anceps, var. *strictum*, *Chap.* Florida.
4. *P. angustifolium*, *Chap.* Florida to Texas.
5. *P. autumnale*, *Bosc.* South and West.
6. *P. bulbosum*, *H. B. K.* New Mexico and Arizona.
P. bulbosum, var. *minor* (*P. maximum*, var. *bulbosum*, *Auct.*). New Mexico and Arizona.
7. *P. capillare*, *Linn.* Common.
P. capillare, var. *flexile*, *Gattinger.* Tennessee and South.
P. capillare, var. *minimum*, *Engel.?* Western.
8. *P. ciliatissimum*, *Buckl.* Texas.
9. *P. clandestinum*, *Linn.* Common.
P. clandestinum, var. *pedunculatum*, *Torr.* Common.
10. *P. colonum*, *Linn.* (*P. Walteri*, *Ell.*). South and West.
11. *P. consanguineum*, *Kth.* (*P. angustifolium*, *Ell.*). Chiefly South.
12. *P. commutatum*, *Schultz* (*P. nervosum*, *Muhl.*). East and South.

13. *P. erusgalli*, *Linn.* Common.
P. erusgalli, var. *hispidum*. Common.
P. erusgalli, var. *muticum*. Texas and westward.
14. *P. Curtissii*, *Chap.* South.
15. *P. debile*, *Poir* (*P. hians*, *Ell.* *P. melicarium*, *Mx.*). South.
16. *P. depauperatum*, *Muhl.* Common.
17. *P. dichotomum*, *Linn.* Common.
18. *P. discolor*, *Spreng.* Florida.
19. *P. fasciculatum*, *Sic.* Florida to Texas.
20. *P. filiforme*, *Linn.* Common.
21. *P. fuscum*, *Sicz.* Florida to Texas.
22. *P. gibbum*, *Ell.* North Carolina to Texas.
23. *P. giganteum*, *Scheele?* (*P. diffusum*, *Sic.?*). Texas.
24. *P. glabrum*, *Gaud.* (*Digitaria glabra*, *R. & S.*). Rare.
25. *P. grossarium*, *Linn.* Ballast ground, Philadelphia.
26. *P. gymnocarpum*, *Chap.* South Carolina to Texas.
27. *P. jumentorum*, *Pers.* (*P. maximum*, *Jacq.*). Introduced in Florida.
28. *P. latifolium*, *Linn.* Common.
29. *P. laxiflorum*, *Lam.* (*P. dichotomum*, var. *Auct.*). Common.
30. *P. leucophæum*, *H. B. K.* Florida to Texas and Arizona.
31. *P. microcarpum*, *Muhl.* Common.
P. microcarpum, var. *sphærocarpon* (*P. sphærocarpon*, *Ell.* *P. dichotomum*, var. *sphærocarpon*, *Gr.*). Common.
32. *P. miliaceum*, *Linn.* Cultivated and sparingly naturalized.
33. *P. obtusum*, *H. B. K.* Texas and southwestward.
34. *P. paspaloides*, *Pers.* Southern States to Texas.
35. *P. pauciflorum*, *Ell.* Common.
36. *P. plantagineum*, *Linn.* Ballast grounds, Philadelphia.
37. *P. proliferum*, *Lam.* Common.
P. proliferum, var. *geniculatum* (*P. geniculatum*, *Ell.*). South.
38. *P. prostratum*, *Lam.* Louisiana and Alabama.
39. *P. ramulosum*, *Mx.* (*P. dichotomum*, var.). Common.
40. *P. repens*, *Linn.* Naturalized at Mobile.
41. *P. sanguinale*, *Linn.* (*Digitaria*). Common.
42. *P. scabriusculum*, *Ell.* Southern States.
43. *P. scoparium*, *Muhl.?* Southern States.
44. *P. serotinum*, *Mx.* (*Digitaria villosa*, *Ell.*). Southern States.
45. *P. striatum*, *Lamr.* Florida.
46. *P. tenuiculmum*, *Chap., non Meyer.* Florida.
47. *P. Texanum*, *Buckl.* Texas.
48. *P. Urvilleanum*, *Kth.* California.
49. *P. velutinosum*, *Nees?* New Mexico and Arizona.
50. *P. verrucosum*, *Muhl.* Near the Atlantic coast?
51. *P. viscidum*, *Ell.* (*P. scoparium Lamr.?*). Common.
52. *P. xanthophysum*, *Gray.* Northern and Eastern States.

P. virgatum
P. pilosum

in small clusters?
OPLISMENUS, Beauv.

Spikelets clustered along the distant, sessile branches of the simple panicle, with one perfect terminal flower and three empty glumes; the lowest glume nearly as large as the others and awned, the second and third glumes also awned or pointed.

1. *O. setarius* R. & S.? (*Panicum hirtellum*, Lam.). Florida to Texas.

SETARIA, Beauv.

Spikelets in a cylindrical spike-like, or sometimes an interrupted, panicle. Below the articulation of the spikelets are several (or sometimes one?) bristles which are supposed to be abortive branchlets, which are persistent after the fall of the spikelets. The spikelets contain one terminal fertile flower (its glume and palea indurated and striate), and usually a lower male or sterile one. The outer empty glumes and the lower flowering one are membranaceous.

1. *S. composita*, Kth. Florida.
2. *S. corrugata*, Schultz. Florida.
3. *S. glauca*, Beauv. Naturalized. Common.
S. glauca, var. *penicillata*, Willd.? Texas.
S. glauca, var. *laevigata*, Chap. Florida.
4. *S. Italica*, Kth. Introduced and cultivated.
5. *S. setosa*, Beauv. Texas and New Mexico.
S. setosa, var. *caudata* (*Panicum caudatum*, Lam.). Texas and New Mexico.
6. *S. unisetia*, Fourn. Texas.
7. *S. verticillata*, Beauv. Naturalized. Common.
8. *S. viridis*, Beauv. Naturalized. Common.

CENCHRUS, Linn.

Spikelets much as in *Panicum*, inclosed 1 to 3 together in a thick, coriaceous, spiny involucre, or bur, these arranged in an oblong or cylindrical panicle.

1. *C. echinatus*, Linn. South.
2. *C. incertus*, M. A. C. (*C. strictus*, Chap.). Southern States.
3. *C. myosuroides*, H. B. K. South and West.
4. *C. tribuloides*, Linn. Common.

PENNISETUM, Pers.

Spikelets with one terminal perfect flower, and a second male or neuter one below it, solitary, or two to three together, closely surrounded by an involucre of usually numerous simple or plumose bristles which disarticulate from the pedicel with the spikelets. The spikelets are crowded in a spike-like panicle, or on pedunculated spike-like branches. The lower empty glume is small, the second and that of the sterile

flower are membranaceous, many-nerved, and longer than the perfect flower, the glume of which is thicker and more rigid.

1. *P. setosum*, *Rich?* Florida.

SPARTINA, *Schreb.*

Spikelets one-flowered, much flattened, sessile along one side of the long, triangular rhachis or spikes, which are racemose on the panicle; outer glumes strongly compressed with a rigid keel, unequal, awnless; flowering glume membranaceous, compressed, carinate, awnless; palet nearly equaling its glume, two-keeled.

1. *S. cynosuroides*, *Willd.* Common.
2. *S. gracilis*, *Hook.* Saline plains in Rocky Mountains, also Florida.
3. *S. juncea*, *Willd.* Marshes near the coast.
4. *S. polystachya*, *Willd.* Marshes near the coast.
5. *S. stricta*, *Roth.* Marshes near the coast.
S. stricta, var. *glabra*, *Gray.* Marshes near the coast.
S. stricta, var. *alterniflora*, *Gray.* Marshes near the coast.

STENOTAPHRUM, *Trin.*

Spikelets two-flowered, the terminal one perfect and fertile, the lower one male or imperfect, the lowest empty glume short and obtuse, the second the largest, the two flowering glumes rather smaller, palets of both flowers similar in texture. The spikelets are imbedded, singly or two or three together, in alternate excavations of the broad flattened rhachis of a spike-like panicle.

1. *S. Americanum*, *Schkr.* Southern States, near the coast.

PHARUS, *Linn.*

Flowers monœcious in a terminal panicle. Spikelets in pairs, unequal; the smaller one pediceled, its flowering glume membranaceous and with 6 stamens; the larger one sessile, its flowering glume indurated and involving the membranous palet and the pistil; empty glumes two, nearly equal, membranaceous.

1. *P. latifolius*, *Trin.* South Florida.

COIX, *Linn.*

Flowers monœcious in terminal and lateral cymose panicles, the upper part male, the lower part female. Male spikelets two-flowered, empty glumes two, the flowers membranaceous. The pistillate spikelets, one to two flowered, are inclosed within a bract which becomes a round, bony, shining involucre; they have each two empty membranaceous glumes, the terminal flower pistillate and fertile, the lower flower neutral.

1. *C. lachryma*, *Linn.* Hardly naturalized.

TRIPSACUM, *Linn.*

Flowers monœcious in jointed spikes, the upper part of which is male and the lower female. The upper or male spikelets are sessile, in pairs at each joint of the triangular rhachis; each spikelet contains two membranaceous male flowers, the outer glumes coriaceous or rigid. The pistillate spikelets are single and imbedded in the joints of the thickened cartilaginous rhachis, two-flowered, the upper flower fertile, the lower neutral; the outer empty glume is thickened and cartilaginous, the inner much thinner and pointed; the flowering glumes and palets are thin and scarious. At maturity the rhachis breaks up at the joints with the imbedded spikelets.

1. *T. dactyloides*, *Linn.* Common.
2. *T. Floridanum*, *Porter.* Florida.
3. *T. Lemmoni*, *Vasey.* Arizona.

HYDROCHLOA, *Beaur.*

Flowers in small, simple, monœcious spikes, mostly included in the sheaths of the upper leaves. Spikelets three or four in each spike, the upper one staminate and exserted. Spikelets one-flowered, consisting of two hyaline scales, which may be considered glumes or palets, the usual outer glumes being absent. Stamens 6, styles 2, stigmas elongated. A small semi-aquatic grass. *Semi?*

1. *H. Caroliniensis*, *Beaur.* Florida to North Carolina.

ZIZANIA, *Linn.*

Flowers in large, diffuse, monœcious panicles. Spikelets one-flowered, consisting of two membranaceous scales (glumes or palets), the lower glumes absent or reduced to a cup-like ring; stamens 6, styles 2, distinct or united. In the fertile spikelets the lower scale or glume is tipped with a straight awn. Tall aquatic grasses.

1. *Z. aquatica*, *Linn.* Wild rice. Common.
2. *Z. miliacea*, *Mx.* Wild rice. Less common.

LUZIOLA, *Juss.*

usually in mon. fl. in terminal panicles, the female in the lower or lateral ones
Flowers in monœcious panicles, the male and female spikelets vari-
ously arranged. Spikelets one-flowered, with two nearly equal mem-
branaceous scales (glumes or palets), the lower glumes wanting or
reduced to minute scales. Stamens usually more than 6, styles 2, short
and distinct.

1. *L. Alabamensis*, *Chap.* Alabama.

LEERSIA, *Swartz.*

Flowers in one-sided paniced spikes or racemes. Spikelets one-
flowered, with two chartaceous scales (glumes or palets), which are
strongly compressed or conduplicate, awnless, bristly ciliate on the

keels, the lower one much broader and inclosing the seed. Stamens 1 to 6, stigmas 2, grain flattened. Perennial grasses, the leaves and sheaths rough with minute prickles. *Wistly fine*

1. *L. hexandra*, *Sucz.* Florida to Texas.
2. *L. lenticularis*, *Mx.* South and West.
3. *L. monandra*, *Sucz.* Florida.
4. *L. oryzoides*, *Sucz.* Common.
5. *L. Virginica*, *Willd.* Common.

THURBERIA, *Benth.*

Panicle rather long and loose. Spikelets narrow, one-flowered, and with an awn-like pedicel, outer glumes equal and coriaceous, the flowering glume nearly as long, chartaceous, compressed, the apex obliquely truncate and terminating in a long twisted awn; palea somewhat shorter and narrower, membranaceous; stamens 3, styles distinct.

1. *T. Arkansana*, *Benth.* (*Limnas*, *Steudel*, *Greenia*, *Nutt.*, *Sclerachne*, *Torr.*). Arkansas and Texas to Florida.

Trinius made a second species, from Texas (*T. pilosa*), but it is probably only a pubescent form of the first. Dr. Chapman says "spikelets two-flowered," which must be a mistake.

HILARIA, *H. B. K.*

Inflorescence in terminal spikes; the spikelets in small clusters of three, closely sessile at the joints of the rachis, the central spikelet containing a single fertile flower, either female or perfect; the two lateral spikelets each with two or three male flowers. The spikelets are so closely sessile as to require much care to separate them properly. The outer glumes of the spikelets are unlike, mostly thin, rigid, and strongly nerved, some, lobed or bifid, dentate or lacerate at the apex, some, awnless, and some, awned between the lobes.

1. *H. cenchroides*, *H. B. K.*, var. *Texana*. Texas and New Mexico.
2. *H. Jamesii*, *Benth.* (*Pleuraphis*, *Torr.*). Texas and New Mexico.
3. *H. mutica*, *Benth.* (*Pleuraphis mutica*, *Buckl.*). Texas and New Mexico.
4. *H. rigida*, *Benth.* (*Pleuraphis rigida*, *Thurber*). Arizona.

ÆGOPOGON, *H. B. K.*

Inflorescence in loose, one-sided, terminal and lateral, spikes or racemes; the spikelets are one-flowered in clusters of two or three, one of which is usually sterile or male only. The outer glumes are cuneate, emarginate, aristate, and shorter than the flowering glumes, which are three-nerved and three-awned; the palea are two-nerved and two-awned. Stamens 3, styles 3.

1. *Æ. cenchroides*, *Willd.* Texas.
2. *Æ. geminiflorus*, *H. B. K.* New Mexico and Arizona.

TRAGUS, *Hall*.

Flowers in rather close terminal spikes; the spikelets in clusters of 2 to 5, mostly 3, one of which is imperfect. The perfect spikelets are one-flowered, with dissimilar glumes, the lower one minute and membranaceous, the upper one concave, subcartilaginous, and beset with stout hooks; the flowering glume is firmly membranaceous and acute; the palet is shorter and thinner, two-nerved. Stamens 3, styles distinct.

1. *T. racemosus*, *Hall*. Introduced. Rare.

IMPERATA, *Cyr*.

Inflorescence densely spicate or in a spike-like panicle, the spikelets usually in pairs, one sessile and the other pediceled along the slender rhachis of the short branches of the panicle, with long silky hairs at the base and on the outer glumes. Spikelets with one perfect and one neutral flower, the outer glumes thin, nearly equal, silky; the flowering glumes smooth and hyaline; palet usually truncate and jagged at the top. Stamens 2, styles 2.

1. *I. arundinacea*, *Cyr*. Mexican border.
2. *I. caudata*, *Cyr*.? Florida.

ERIANTHUS, *Michx*.

Panicle terminal, narrow and dense, or lax and open, the branches spike-like, 2 to 5 at each joint. Spikelets by pairs (one sessile, the other pediceled) on the narrow rhachis, both alike, each two-flowered, the lower flower consisting of one membranaceous glume and no palet, the upper flower perfect, its glume and palet shorter, membranaceous, the glume bifid and awned from the tip. The two lodicules are distinct and broader than the palet. A tuft of hairs around the base of each spikelet, except in *E. strictus*.

1. *E. alopecuroides*, *Ell*. Diffuse but not common. *Saccharodes*
E. alopecuroides, var. *brevibarbis* (*E. brevibarbis*, *Mx*). Southern.
E. alopecuroides, var. *contortus* (*E. contortus*, *Ell*). Southern.
2. *E. strictus*, *Bald*. Florida.

ELIONURUS, *H. B. K.*

Spikelets compressed, in pairs (one sessile and one pediceled) at each alternate joint of the simple spike, the sessile with one perfect flower, the pediceled spikelet with a sterile flower. The true palet is wanting in all the flowers, the apparent palet being a thin, five-nerved glume, so that, as Mr. Benthams states, there are four glumes in each spikelet, the outer one the largest and thickest, the other thin and membranaceous, all rather acute.

1. *E. ciliaris*, *H. B. K.* Texas and westward.
2. *E. candidus*, *Trin*. Texas and westward.
3. *E. Nuttallianus*, *Benth*. (*Andropogon Nuttallianus*, *Chap*). Florida.

ROTTBÆLIA, *Linn.*

Flowers in terminal and lateral cylindrical spikes. Spikelets in pairs at each joint of the rachis, one sessile and imbedded in an excavation of the rachis, the other short pediceled, erect, and appressed. The sessile spikelet has two thick outer glumes, two hyaline ones and a hyaline palet, with the stamens and pistil. In other words, there is one terminal perfect flower and a rudimentary or sometimes a male one below. The pediceled spikelet is usually imperfect, male only, or reduced to empty glumes.

1. *R. cylindrica*, *Chap.* Florida to Texas.
2. *R. rugosa*, *Nutt.* Southern States.
3. *R. corrugata*, *Bald.* Southern States.

MANISURIS, *Swartz.*

Spikelets in pairs in the one-sided notches of the articulate rachis of a simple spike, one sessile and half imbedded in a cavity of the rachis, with one perfect flower, the other on a short appressed pedicel and reduced to two empty glumes. Outer glumes of perfect flower two, the lower globular and hard, the second smaller and concave, thin but rigid. Third and fourth glumes small and hyaline. Palet, none; the fourth glume usually considered a palet.

1. *M. granularis*, *Swz.* Introduced. Texas and New Mexico.

ISCHÆMUM, *Linn.*

Spikelets in pairs in the alternate notches of the articulate flexuous rachis of simple spikes, one sessile with one perfect flower and a male one below it, the other pediceled and similar or defective. The sessile spikelet has two thickish outer glumes and two thin hyaline flowering glumes, the upper one usually awned. The palea are small and hyaline, sometimes absent.

1. *I. leersioides*, *Munro.* Introduced in California.

HETEROPOGON, *Pers.*

Spikelets one flowered, monœcious, in pairs in the notches of the rachis of a one-sided spike, one sessile and pistillate, cylindrical, turned to one side of the spike, the other pediceled and staminate, imbricate on the other side of the spike. The lower outer glume is hard and convolute; the upper, thinner and keeled; the third glume is thin and hyaline; the fourth, or flowering glume, terminated with a hard, twisted awn; palets very small and thin or wanting.

1. *H. contortus*, *R. & S.* (*Andropogon contortus*, *L.*). Texas and Southwest.

2. *H. Allioni*, *R. & S.* (*Andropogon Allioni*, *Caud.*). New Mexico and Arizona.
3. *H. melanocarpus*, (*Andropogon melanocarpus*, *Ell.*). Florida and Georgia.

TRACHYPOGON, *Nees*.

Spikelets arranged and constituted as in *Heteropogon*, except that the sessile spikelet is male and the pediceled one pistillate.

1. *T. Montufari*, *Nees*. Arizona.

ANDROPOGON, *Linn.*

Inflorescence in simple or paniculate spikes. Spikelets in pairs in the alternate notches of the rachis, one sessile and fertile, the other pediceled and sterile (either male or empty). Fertile spikelet with two more or less coriaceous outer glumes, a third hyaline empty glume, and the fourth or flowering glume also hyaline and awned. The sterile spikelet similar, but empty or male only and unawned. Palea small and hyaline or wanting.

1. *A. aretatus*, *Chap.* (*A. tetrastachys*, var. *Chap.*). Florida.
2. *A. argyreus*, *Schultes* (*A. argenteus*, *Ell.* non *D. C.*). Florida.
3. *A. brachystachyus*, *Chap.* Florida.
4. *A. clandestinus*, *Hale* ined. (*A. Elliottii*, *Chap.*). Florida to Texas.
A. clandestinus, var. *stenophyllus*, *Chap.* Florida.
A. clandestinus, var. *corymbosus*, *Chap.* Florida.
5. *A. dissitiflorus*, *Mx.* (*A. Virginicus*, *L.* in part). Common.
A. dissitiflorus, var. *vaginatus*, *Chap.* (*A. vaginatus*, *Chap.*). Florida.
A. dissitiflorus, var. *tetrastachyus*, *Chap.* (*A. tetrastachyus*, *Ell.*). Florida.
A. dissitiflorus, var. *gracilis*, *Chap.* (*A. gracilis*, *Carp.*). Louisiana.
6. *A. furcatus*, *Muhl.* Common.
A. furcatus, var. Texas to Colorado.
7. *A. hirtiflorus*, *Kth.* Arizona.
8. *A. hirtifolius*, *Presl.*, var. *glabrescens*, *Munro*. New Mexico.
9. *A. macrourus*, *Mx.* Common.
A. macrourus, var. *glaucoptis*, *Chap.* Florida.
A. macrourus, var. *viridis*, *Chap.* Florida.
10. *A. maritimus*, *Chap.* (*A. scoparius*, *Mx.* in part). New Jersey to Florida.
11. *A. oligostachyus*, *Chap.* Florida.
12. *A. saccharoides*, *Swz.* (*A. argenteus*, *D. C.*). Texas to Arizona.
13. *A. scoparius*, *Mx.* Common.
14. *A. tener*, *Kth.* Florida and westward.

CHRYSOPOGON, *Trin.*

Flowers loosely paniculate. Fertile spikelets one-flowered, sessile between two pedicellate male or barren spikelets at the end of the

slender branches of the panicle, with, sometimes, one to three pairs of spikelets on the branch below the terminal three. Fertile spikelets with the lower glume larger and coriaceous; the second narrower, thick, keeled, pointed or awned; the third hyaline and empty; the fourth or flowering glume hyaline and awned. Palet minute or none.

1. *C. nutans*, *Benth.* (*Sorghum nutans*, *Gr.*). Common.
2. *C. avenaceus*, *Benth.* (*Sorghum avenaceum*, *Chap.*). Southern.
3. *C. secundum*, *Benth.* (*Sorghum secundum*, *Chap.*). Southern.
4. *C. pauciflorum*, *Benth.* (*Sorghum pauciflorum*, *Chap.*). Southern.

SORGHUM, *Pers.*

Spikelets much as in *Chrysopogon*, differing chiefly in habit and in the glumes of the fertile spikelets becoming more hardened after flowering.

1. *S. halapense*, *Linn.* Introduced and sparingly naturalized.
- S. vulgare* is extensively cultivated, but not naturalized.

PHALARIS, *Linn.*

Spikelets one-flowered, compressed, densely crowded in an ovoid or cylindrical spike, or on the densely flowered branches of a panicle. The outer glumes are acute, boat-shaped, keeled, becoming coriaceous or cartilaginous; within these the flower consisting of two glumes, sometimes called palets, inclosing the stamens and pistil; below the flower one, or sometimes two, small scales or bristles, which are considered abortive glumes.

1. *P. arundinacea*, *Linn.* North and Northwest.
 2. *P. amethystina*, *Trin.* California and Oregon.
 3. *P. Canariensis*, *Linn.* Sparingly naturalized.
 4. *P. intermedia*, *Bosc.* (*P. Californica*, *H. & A.*) Texas to California.
- P. intermedia*, var. *angusta*, *Chap.* (*P. angusta*, *Nees*). Texas to California.

ANTHOXANTHUM, *Linn.*

Panicle somewhat spiked. Spikelets one-flowered, with two pairs of empty glumes, the outer pair acute, keeled, the first or lowest half as long as the second; the third and fourth glumes (second pair) are much shorter, thin, two-lobed, pubescent, and awned on the back; the fifth and sixth glumes (commonly considered the perfect flower) are still smaller, the fifth broad, thin, and three-nerved, the sixth (commonly considered the upper palet) narrow, hyaline, one-nerved. No true palet. Stamens 2, styles 2, distinct.

1. *A. odoratum*, *Linn.* Sweet vernal-grass. Naturalized.

HIEROCHLOA, *Gmelin.*

Spikelets three-flowered in an open panicle; the terminal flower perfect, but with only two stamens, the two lower flowers male only, each

with three stamens; the two outer glumes thin and scarious, acutely keeled, the glumes of the male flowers thicker, sometimes short-awned, each inclosing a narrow, thin, bifid, two-keeled palet; the upper or perfect flower has a one-nerved glume in place of the usual palet.

1. *H. alpina*, *R. & S.* High mountains.
2. *H. borealis*, *R. & S.* Northern and subalpine.
3. *H. macrophylla*, *Thurb.* California and Oregon.
4. *H. pauciflora*, *R. Br.* Melville Island.

ALOPECURUS, *Linn.*

Flowers crowded in a cylindrical spike. Spikelets one-flowered. Outer glumes strongly compressed, boat-shaped, keeled, nearly equal, frequently united at the base; third or flowering glume shorter, keeled, with a slender dorsal awn, frequently more or less united below by the opposite margins, and inclosing the stamens and styles; without a palet.

1. *A. agrestis*, *Linn.* Sparingly naturalized.
2. *A. alpinus*, *Sm.* Rocky Mountains.
3. *A. geniculatus*, *Linn.* Frequent.

- A. geniculatus*, var. *aristulatus* (*A. aristulatus*, *Mx.*). Common.
4. *A. pratensis*, *Linn.* Naturalized.
 5. *A. saccatus*, *Vasey.* Oregon.

ARISTIDA, *Linn.*

Spikelets one-flowered in a spicate, or an open branching panicle *usually* generally on filiform pedicels; outer glumes *unequal*, often bristle-pointed; flowering glume narrow, rolled around the flower, terminating with a trifid awn, or apparently three-awned. Palet *small* and thin, inclosed in the flowering glume.

1. *A. bromoides*, *H. B. K.* New Mexico to California.
 2. *A. Californica*, *Thurb.* Southern California.
 3. *A. condensata*, *Chap.* Florida.
 4. *A. desmantha*, *Rupt.* Texas.
 5. *A. dichotoma*, *Linn.* Common.
 6. *A. dispersa*, *Trin.* New Mexico, Arizona.
 7. *A. Floridana*? (*Streptachne Floridana*, *Chap.*). Florida.
 8. *A. gracilis*, *Ell.* Common.
 9. *A. gyrans*, *Chap.* Florida.
 10. *A. Humboldtiana*, *Tr. & Rup.* New Mexico to Arizona.
 11. *A. lanata*, *Poir.* Florida and westward.
 12. *A. oligantha*, *Mx.* Common.
 13. *A. Palmeri*, *Vasey.* Southern Arizona.
 14. *A. purpurea*, *Nutt.* Texas and westward.
- A. purpurea*, var. *Fendleri* (*A. Fendleri*, *Steud.*). Texas and New Mexico.
- A. purpurea*, var. *longiseta* (*A. longiseta*, *Steud.*). Texas and New Mexico.

- A. *purpurea*, var. *Californica*, *Vasey*. California.
15. A. *purpurascens*, *Poir.* Frequent.
- A. *purpurascens*, var. *palustris*? (A. *virgata*, var. *palustris*, *Chap.*). Florida.
16. A. *ramosissima*, *Engel.* Illinois and Missouri.
17. A. *scabra*, *Kth.* Florida.
18. A. *Scheidiana*, *Tr. & Rup.* Texas and New Mexico.
19. A. *simplicifolia*, *Chap.* Florida.
20. A. *spiciformis*, *Ell.* Southern States.
21. A. *stricta*, *Mx.* Common.
- A. *stricta*, var. *Texensis*, *Vasey.* Texas.
22. A. *tuberculata*, *Nutt.* Western.
23. A. *virgata*, *Trin.*?

STIPA, *Linn.*

Spikelets one-flowered, terete, spicate or paniculate. Outer glumes membranaceous, keeled; flowering glume narrow, coriaceous, rigid, involute, with a simple, twisted awn from the apex; palea usually small and inclosed by the flowering glume. Stamens generally 3. The flowering glume has a hardened, often sharp-pointed and bearded, pedicel or stipe at its base.

1. S. *avenacea*, *Linn.* Common.
2. S. *chrysophylla*, *Desv.* California.
3. S. *comata*, *Trin.* Texas to California.
4. S. *coronata*, *Thurb.* California.
5. S. *eminens*, *Car.* California.
6. S. *fimbriata*, *H. B. K.* New Mexico and Arizona.
7. S. *Kingii*, *Bolander.* California and Nevada.
8. S. *Mongolica*, *Turcz.* Rocky Mountains.
9. S. *occidentalis*, *Thurb.* California.
10. S. *Parishii*, *Vasey.* California.
11. S. *pennata*, var. *Neo Mexicana*, *Thurb.* New Mexico, Texas.
12. S. *Richardsonii*, *Link.* Rocky Mountains.
13. S. *setigera*, *Presl.* Texas to California.
14. S. *spartea*, *Trin.* Illinois and westward.
15. S. *speciosa*, *Tr. & Rup.* California and Nevada.
16. S. *Sibirica*, *Lam.*? California.
17. S. *Stillmanii*, *Bolander.* California.
18. S. *stricta*, *Vasey.* California, Oregon, Nevada.
19. S. *tenuissima*, *Trin.* Mexican border.
20. S. *viridula*, *Trin.* Rocky Mountains.

ORYZOPSIS, *Michx.*

Spikelets one-flowered. Differing from *Stipa* in the shorter and broader flowering glume, often oblique at the top; the awn usually short, slender, twisted, and very deciduous.

1. *O. asperifolia*, Michx. New York and New England.
2. *O. canadensis*, Torr. New York, Pennsylvania, New England, Wisconsin.
3. *O. melanocarpa*, Muhl. New York and New England.
4. *O. micrantha*, Thurb. Rocky Mountains.
5. *O. cuspidata*, Benth. (*Eriocoma cuspidata*, Nutt.). Rocky Mountains.
6. *O. Webberi*?, Benth. (*Eriocoma Webberi*, Thurb.). California.
7. *O. exigua*, Thurb. Oregon.

MILIUM, Linn.

Spikelets panicleled; outer glumes membranaceous, equal and convex, the flowering glume and its palet coriaceous, much as in *Panicum*, but the articulation with the rhachis is above the outer glumes. All the glumes are unawned and there is no sterile pedicel.

1. *M. effusum*, Linn. New England, New York, and Northwest.

MUHLENBERGIA, Schreb.

Spikelets one-flowered, small, paniculate, articulated above the outer glumes; flowering glume with a very short, usually hairy callus. Outer glumes variable in size, from small or minute to nearly as large as the flowering glume, sometimes bristle-pointed, keeled, persistent, thin; flowering glume three to five nerved, rigid or thinnish, mucronate or awned, sometimes with a long capillary awn from the apex between the short teeth, frequently pubescent below; palet about as long as the flowering glume and of similar texture.

1. *M. ambigua*, Torr.? Rocky Mountains.
2. *M. arenicola*, Buckl. Texas to Florida.
3. *M. Berlandieri*, Trin. Texas and New Mexico.
4. *M. capillaris*, Kth. Middle and Southern States.
M. capillaris, var. *filipes* M. A. C. Southern States.
5. *M. comata*, Benth. (*Vaseya comata*, Thurb.). Rocky Mountains.
6. *M. debilis*, Trin. Rocky Mountains and Great Plains.
7. *M. diffusa*, Schreb. Common.
8. *M. distichophylla*, Kth. New Mexico and Arizona (*Epicampes* sp.?).
9. *M. dumosa*, F. L. S. Arizona.
10. *M. glomerata*, Trin. Common.
M. glomerata, var. *brevifolia*, Vasey. California.
M. glomerata, var. *longiglumis*, Vasey. Nevada.
11. *M. gracilis*, Trin. Texas, New Mexico, and Arizona.
M. gracilis, var. *major*, Vasey. New Mexico and Arizona.
M. gracilis, var. *breviaristata*, Vasey. Great Plains and Rocky Mountains.
12. *M. gracillima*, Torr. Great Plains and Rocky Mountains.
13. *M. Mexicana*, Trin. Common.
M. Mexicana, var. *filiformis*. Common.

14. *M. pauciflora*, *Buckl.* Texas.
15. *M. pungens*, *Thurb.* Great Plains and Rocky Mountains.
16. *M. setifolia*, *Vasey.* Texas.
17. *M. sobolifera*, *Trin.* Common.
18. *M. sylvatica*, *T. & G.* Common.
M. sylvatica, var. *Californica.* California.
M. sylvatica, var. *flexuosa.* New Mexico and Arizona.
M. sylvatica, var. *setiglumis.* Nevada.
19. *M. trichopodes*, *Chap.* Florida to Texas.
20. *M. Texana*, *Thurb.* New Mexico and Arizona.
21. *M. virescens*, *Trin.* New Mexico and Arizona.
22. *M. Willdenovii*, *Trin.* Common.
23. *M. Wrightii*, *Vasey* ined. New Mexico and Colorado.

BRACHYELYTRUM, *Beauv.*

Spikelets one-flowered and with a sterile rudiment, appressed, in a simple racemose panicle; outer glumes minute, unequal, the upper and larger about half a line long, persistent; flowering glume chartaceous, rigid, produced at the apex into an awn 8 to 10 lines long; palet hyaline, two-keeled, bifid at the apex. The rudiment (continuation of the rhachilla) is bristle-like, half as long as the palet, and partly lodged in the groove on its back.

1. *B. aristatum*, *Beauv.* Common.
B. aristatum, var. *Engelmanni.* ?

LYCURUS, *H. B. K.*

Spikelets one-flowered, single on the short branches of the spike-like panicle, both the outer and the flowering glumes awned; outer glumes small, membranaceous, the upper, one awned, and the lower, two or three, the awns longer than the flower; flowering glume and palet of thicker texture (as in *Muhlenbergia*). There are sterile spikelets intermixed with the fertile ones.

1. *L. phleoides*, *H. B. K.*

HELEOCHLOA, *Host.*

Spikelets one-flowered, perfect, crowded in a spike or spike-like panicle, which is partly included in the bract-like sheath of the upper leaf. Outer glumes membranaceous, acute, complicate, carinate, not awned; flowering glume similar, keel thickish and herbaceous; palet rather shorter, compressed, two-nerved or two-keeled.

1. *H. schœnoides*, *Host.* (*Crypsis schœnoides*, *Lam.*). On Ballast-ground.

PHLEUM, *Linn.*

Spikelets one-flowered, in small clusters, crowded into a dense spike-like cylindrical panicle; outer glumes one-nerved, mucronate or short

awned; flowering glume membranaceous, shorter and broader than the outer glumes, in our native species truncate and toothed at the apex; palet hyaline, narrow. In some species there is a small rudiment or bristle below the flower.

1. *P. alpinum*, *Linn.* Mountains of New England and Rocky Mountains.
2. *P. pratense*, *Linn.* Native in elevated mountainous districts, also introduced and cultivated as *Timothy*.

COLEANTHUS, *Seid.*

Spikelets one-flowered, very small, perfect; outer glumes wanting; flowering glume membranaceous, one-nerved, keeled, acuminate or short aristate; palet shorter and wider than the flowering glume, two-keeled, acutely two-toothed. A minute annual grass. Stamens 2, stigmas 2, sessile.

1. *C. subtilis*, *Seid.* Sauvie's Island, Oregon.

PHIPPSIA, *R. Br.*

Spikelets one-flowered, outer glumes minute, unequal, membranaceous; flowering glume thin, three to four times longer than the outer ones, obscurely three-nerved, keeled, acute; palet a little shorter, two-keeled, two to four toothed at the apex.

1. *P. algida*, *Br.* Melville Island and Arctic regions.

SPOROBOLUS, *R. Br.* (including *Vilfa*, *Beaur.*).

Spikelets one, rarely two flowered in a contracted or open panicle. Outer glumes unequal, the lower one shorter, often acute, unawned, one to three nerved, membranaceous; flowering glume mostly longer, unawned; palet about equaling the flowering glume and of the same texture, prominently two-nerved. Seed mostly loose in a hyaline or rarely coriaceous pericarp.

1. *S. airoides*, *Torr.* Rocky Mountains and Plains.
2. *S. argutus*, *Kth.* Arizona.
3. *S. Arkansana*, *Nutt.* Texas and Arkansas.
4. *S. asper*, *Kth.* Common.
5. *S. aspericaulis*?
6. *S. asperifolius*, *N. & M.* Colorado, West and South.
7. *S. compressus*, *Kth.* New Jersey.
8. *S. cryptandrus*, *Gr.* Common.
S. cryptandrus, var. *flexuosus* *Thurb.* New Mexico and Arizona.
9. *S. cuspidatus*, *Torr.* Northwestern.
10. *S. Domingensis*, *Trin.* Florida.
11. *S. depauperatus*, *Torr.* Rocky Mountains and Plains.
12. *S. filiculmis*, *Thurb.* ined.? Western Texas.
13. *S. Floridanus*, *Chap.* Florida.

14. *S. gracillimus*, *Thurb.* California.
15. *S. heterolepis*, *Gr.* Illinois and westward.
16. *S. Indicas*, *R. Br.* Naturalized South and West.
17. *S. interruptus*, *Vasey.* Arizona.
18. *S. junceus*, *Kth.* Florida.
19. *S. Jonesii*, *Vasey.* California.
20. *S. ramulosus*, *Kth.* Rocky Mountains and Plains.
21. *S. serotinus*, *Gr.* New England to New Jersey.
22. *S. tricholepis*, *Torr.* Rocky Mountains.
23. *S. vaginæflorus*, *Torr.* Common.
24. *S. Virginicus*, *Beauv.* Virginia and southward.
- ✓ 25. *S. Wolfii*, *Vasey.* Rocky Mountains (*Vilfa minima*, *Vasey*).
26. *S. Wrightii*, *Munro.* Western Texas and New Mexico.

EPICAMPES, *Presl.*

Spikelets much as in *Sporobolus*, but contracted in a long, narrow, and dense panicle. Outer glumes somewhat unequal, membranaceous, convex on the back, scarcely keeled, obtuse, three-nerved; flowering glume mostly equaling the outer ones, sometimes three to five nerved, entire or sometimes awned from the apex; palet hyaline, about equaling the flowering glume, two-nerved or two-keeled.

1. *E. macroura*, *Benth.* (*Cinna macroura*, *Kth.*). New Mexico.
2. *E. rigens*, *Benth.* (*Cinna macroura*, *Thurb.*). California. *Muhlenbergia Berlandieri*, and *M. distichophylla* probably belong here.

AGROSTIS, *Linn.*

Spikelets one flowered in a contracted or open panicle: outer glumes nearly equal or the lower rather longer, and longer than the flowering glume, one-nerved. acute, unawned; flowering glume shorter and wider, hyaline, three to five nerved, awnless, or sometimes awned on the back; palet shorter than the flowering glume, frequently reduced to a small scale or entirely wanting. Stamens usually 3, grain free.

1. *A. arachnoides*, *Ell.* Southern States to Texas.
2. *A. asperifolia*, *Trin.* California.
3. *A. canina*, *Linn.* Mountainous districts.
A. canina, var. *alpina*. Mountainous districts.
A. canina, var. *rupestris*. Mountains of North Carolina.
4. *A. elata*, *Trin.* Common.
5. *A. exarata*, *Trin.* Common west of Mississippi.
A. exarata, var. *littoralis* *Vasey.* Oregon.
6. *A. exigua*, *Thurb.* California.
7. *A. foliosa*, *Vasey* ined. California and Oregon.
8. *A. geminata*, *Trin.* Oregon to Alaska.
9. *A. humilis*, *Vasey.* Oregon.
10. *A. microphylla*, *Stendel.* California and Oregon.

11. *A. mucronata*, *Presl.* California.
12. *A. perennans*, *Tuck.* Common.
13. *A. scabra*, *Willd.* Common.
14. *A. Scouleri*, *Trin.* California and Oregon.
15. *A. tenuis*, *Vasey.* California.
16. *A. varians*, *Trin.* California and Oregon.
17. *A. verticillata*, *Vill.* Texas to California.
18. *A. virescens*, *H. B. K.* Arizona.
19. *A. vulgaris*, *With.* Red-top. Common.
- A. vulgaris*, var. *alba.* Common.

POLYPOGON, *Desf.*

Spikelets one-flowered in a contracted, mostly spike-like panicle; pedicels of the spikelets rather clavate and usually articulated below the glumes; outer glumes nearly equal and long awned from the apex; flowering glume smaller, thinner, generally hyaline, and generally prolonged at the apex into a slender awn; palet thin, sometimes considerably shorter than its glume.

1. *P. Monspeliensis*, *Desf.* Introduced and naturalized.
2. *P. littoralis*, *Sm.?* Introduced and naturalized.

ARCTAGROSTIS, *Gris.*

Spikelets one-flowered, in a contracted panicle; rarely with a minute bristle-like rudiment; outer glumes persistent, thin, the upper rather longer and three-nerved, the lower one-nerved; flowering glume as long as the outer one, or longer, narrow, lateral nerves obscure, awnless; palet about as long as its glume, two-nerved, obtuse, or obtusely two-toothed.

1. *A. latifolia*, *Gris.* (*Vilfa arundinacea*, *Trin.*). Alaska.

CINNA, *Linn.*

Spikelets one-flowered, much flattened, in an open, spreading panicle; outer glumes lanceolate, acute, strongly keeled, hispid on the keel, the upper somewhat longer than the lower; flowering glume manifestly stalked above the outer glumes, about the same length, three-nerved, short-awned on the back near the apex; palet nearly as long as its glume, only one-nerved (probably by the consolidation of two, *Bentham*); stamen 1.

1. *C. arundinacea*, *Linn.* Common northward.
2. *C. pendula*, *Trin.* Common northward.

GASTRIDIDIUM, *Beauv.*

Spikelets one-flowered, in a loose, tapering, spike-like panicle; outer glumes extended into long acute points, and with an enlarged ventricose base, obscurely keeled, the lower longer than the upper; flowering

glumes very thin, about one-fourth as long as the outer ones, hairy on the back, truncate and dentate at the apex, usually emitting from near the apex a slender awn as long as or longer than the glumes; palet thin, as long as its glume.

1. *G. australe*, *Beauv.* Sparingly introduced.

APERA, *Adans.*

Spikelets one-flowered, small, loosely paniculate, the rhachilla produced beyond the flower in a short bristle; outer glumes persistent, unequal, thinly membranaceous, keeled, acute, not awned, upper one larger, three-nerved; flowering glume somewhat shorter, membranaceous, apex shortly two-toothed, with a slender awn from the back below the apex; palet thin, rather shorter than its glume, two-keeled and two-toothed.

1. *A. spica venti*, *Beauv.* (*Agrostis spica-venti*, *L.*). Introduced on ballast.

DEYEUXIA, *Clarion* (Calamagrostis of American authors).

Spikelets one-flowered, in a contracted or open panicle, usually with a bristle-like or penicillate hairy rudiment opposite the palet (a continuation of the rhachilla); outer glumes about equal, keeled, awnless, membranaceous, or scariose; flowering glume usually with a ring of hairs surrounding its base, entire or two to four toothed, usually bearing an awn on the back; palet narrow, thin, two-nerved, two-keeled.

1. *D. æquivalvis*, *Benth.* (*Agrostis æquivalvis* *Trin.*). Oregon.
2. *D. Aleutica*, *Trin.* California to Alaska.
3. *D. Bolanderi*, *Thurb.* California.
4. *D. Breweri*, *Thurb.* California.
5. *D. Canadensis*, *Beauv.* Common.
6. *D. confinis*, *Nutt.* Pennsylvania to Iowa.
7. *D. crassiglumis*, *Thurb.* California.
8. *D. deschampsoides*, *Trin.* California to Alaska.
9. *D. Howellii*, *Vasey.* Oregon.
10. *D. Langsdorffii*, *Trin.* White Mountains, New Hampshire, to Rocky Mountains and to Alaska.
11. *D. Lapponica*, *Kth.?* Rocky Mountains to Alaska.
12. *D. Nuttalliana*, *Steudel.* Pennsylvania to Virginia.
13. *D. Pickeringii*, *Gr.* New Hampshire to Massachusetts.
14. *D. Porteri*, *Gr.* Pennsylvania.
15. *D. purpurascens*, *R. Br.?* Alaska.
16. *D. rubescens*, *Buckley.* California and Oregon.
17. *D. stricta*, *Trin.* White Mountains to Rocky Mountains.
D. stricta, var. *robusta*, *Vasey.* Rocky Mountains.
18. *D. strigosa*, *Boug.?* Alaska.
19. *D. sylvatica*, *D. C.* Rocky Mountains.
20. *D. Tweedii*, *F. L. S.* Rocky Mountains.

AMMOPHILA, *Host.*

Spikelets one-flowered, in a contracted spike-like ~~or an open, diffuse~~ panicle, with or without a bristle-like rudiment opposite the palet; outer glumes large, nearly equal, rigid, thick, lanceolate, acute, keeled, five-nerved; flowering glume similar in texture, about equal in length, sometimes mucronate at the apex; palet as long as its glume, of similar texture, two-keeled, sulcate between the keels; hairs at the base of the flower usually scanty and short.

1. *A. arundinacea*, *Host.* Sea-coast.
2. *A. brevipilis*, *Benth.* (*Calamagrostis brevipilis*, *Gr.*). New England to Florida.
3. *A. longifolia*, *Benth.* (*Calamagrostis longifolia*, *Gr.*). Illinois to Rocky Mountains.

4. *A. caryophylla*, *Linn.*

AIRA, *Linn.*

Spikelets two-flowered, small, in a loose or rarely contracted panicle with capillary branches, the rhachis rarely produced into a minute bristle; outer glumes thinly scarious, nearly equal, acute; flowering glumes shorter, thin, and hyaline, finely pointed or shortly bifid, with a fine dorsal awn below the middle, which is twisted at the base; palet two-nerved; style short.

1. *A. caryophylla*, *Linn.* Introduced and naturalized.
2. *A. præcox*, *Linn.* Introduced and naturalized.

DESCHAMPSIA, *Beaur.* (Aira of authors).

Spikelets two-flowered, mostly in a loose panicle with slender branches, rhachis hairy and produced into a hairy bristle, which rarely bears an empty glume; outer glumes acute, keeled, with scarious margins; flowering glumes obtuse or more or less four-toothed, with a fine dorsal awn below the middle. Palet prominently two-nerved, often two-toothed.

1. *D. atropurpurea*, *Wahl.*? White Mountains.
2. *D. cæspitosa*, *Beaur.* North and West.
 - D. cæspitosa*, var. *Bottnica* (*Aira Bottnica*, *Wahl.*). California and Oregon.
 - D. cæspitosa*, var. *arctica*. Rocky Mountains.
 - D. cæspitosa*, var. *longiflora*, *Trin.* California.
3. *D. danthonioides*, (*Aira danthonioides*, *Trin.*). California and Oregon.
4. *D. elongata*, (*Aira elongata*, *Hook.*). California and Oregon.
5. *D. flexuosa*, (*Aira flexuosa*, *Linn.*). Atlantic States.
6. *D. holciformis*, *Presl.* California.
7. *D. latifolia*, (*Aira latifolia*, *Hook.*). California and Oregon.

CORYNEPHORUS, *Beauv.*

Spikelets two-flowered, with the rhachilla produced into a short hairy bristle; glumes much as in *Deschampsia*, but distinguished by the peculiar articulate club-shaped awn of the flowering glumes.

1. *C. canescens*, *Beauv.* Introduced on Ballast ground, Philadelphia.

eximia Hey
HOLCUS, *Linn.*

Spikelets two-flowered, crowded in an open panicle, the lower flower perfect, the upper one male only, and with a minute hairy rhachilla or rudiment at its base. Outer glumes nearly equal, compressed, membranaceous, large (fully inclosing the two flowers); flowering glumes half shorter, the lowest awnless, the upper with a short dorsal awn.

1. *H. lanatus*, *Linn.* Velvet-grass. Extensively naturalized.
2. *H. mollis*, *Linn.* Introduced on Ballast ground, Philadelphia.

TRISETUM, *Pers.*

Spikelets two to three, rarely five flowered, in a dense or open panicle, the rhachis usually hairy and produced into a bristle at the base of the upper flower; outer glumes unequal, acute, keeled, membranaceous, with scarious margins; flowering glumes of similar texture, keeled, acute, the apex two-toothed, the teeth sometimes prolonged into bristle-like points, the middle nerve furnished with an awn attached above the middle, which is usually twisted at the base and bent in the middle; palet hyaline, narrow, two-nerved, two-toothed.

1. *T. barbatum*, *Steud.* California.
2. *T. canescens*, *Buckley.* California.
3. *T. cernuum*, *Trin.* California.
4. *T. interruptum*, *Buckley.* Texas.
5. *T. montanum*, *Vasey.* New Mexico and Rocky Mountains.
6. *T. palustre*, *Linn.* Eastern and Southern States.
7. *T. subspicatum*, *Beauv.* White and Rocky Mountains.
8. *T. subspicatum*, var. *molle Gr.* Rocky Mountains.

AVENA, *Linn.*

Spikelets usually large, two to five flowered, the uppermost generally imperfect, in a loose panicle, the rhachis hairy below the flowers; outer glumes nearly equal, lanceolate, acute, scarious; the flowering glumes of firmer texture (in some species cartilaginous), shortly bifid at the apex, with a long dorsal twisted awn below the apex; palet similar in texture to its glume, narrow, prominently two-nerved, two-toothed.

1. *A. fatua*, *Linn.* Wild oats. Extensively naturalized in California.
2. *A. pratensis*, *Linn.* *A. versicolor*, *Vill.?* Oregon and Alaska.
3. *A. sativa*, *Linn.* Common oat, rarely escaped from cultivation.
4. *A. Smithii*, *Porter.* Pennsylvania.
5. *A. striata*, *Michx.* Mountains of New York and New England.

ARRHENATHERUM, *Beauv.*

Spikelets two-flowered in an open panicle, the rhachis hairy and produced beyond the upper flower into a stipe or rudiment; the lower flower male only, the second perfect or female; outer glumes unequal, keeled, very thin, acuminate; flowering glumes five to seven nerved, that of the lowest or male flower with a dorsal, twisted awn attached near the base, that of the fertile flower with a short, straight awn near the tip; palet narrow, hyaline, two-keeled.

1. *A. avenaceum*, *Beauv.* Tall oat-grass. Introduced and cultivated.

DANTHONIA, *D. C.*

Spikelets three to five, or many flowered, in a panicle or simple raceme; the rhachis hairy and produced beyond the flowers in a stipe or imperfect flower; outer glumes narrow, keeled, acute, usually as long as the spikelet; flowering glumes convex on the back, of firmer texture, seven to nine nerved, with two rigid or scarious terminal teeth or lobes, and with a flattish, twisted and bent awn between the teeth; palet broad, two-keeled, obtuse or two-pointed.

1. *D. Californica*, *Boland.* Rocky Mountains and California.
- D. Californica*, var. *unispicata*, *Thurb.* California.
2. *D. compressa*, *Austin.* Mountains of the Alleghany range.
3. *D. intermedia*, *Vasey.* Rocky Mountains to Canada.
4. *D. sericea*, *Nutt.* Southern Atlantic States.
5. *D. spicata*, *Beauv.* Common.

CYNODON, *Pers.*

Spikelets sessile in two rows on one side of the slender spikes, which are digitate at the end of the peduncle or culm; one-flowered with a short pediceled, naked rudiment of a second flower; outer glumes nearly equal, keeled; flowering glume boat-shaped, broader, prominently keeled; palet narrower, prominently two-keeled.

1. *C. dactylon*, *Pers.* Bermuda grass. Naturalized and cultivated.

CTENIUM, *Pauz.*

Spikelets densely imbricated in two rows on one side of the rhachis of the usually solitary terminal spike, elegantly pectinate, with one perfect and one or more imperfect or neutral flowers; outer glumes very unequal, the lower small, the upper large and bearing on the middle of the back a recurved awn tuberculate at the base; usually only one of the flowering glumes has a palet; glumes of the perfect and lower imperfect ones are mucronate or aristate at the apex, the upper imperfect ones awnless.

1. *C. Americanum*, *Spreng.* Southern States.

CHLORIS, *Swz.*

Spikelets crowded in two rows on one side of simple spikes which are digitate or fasciculate at the summit of the culm; one (the lower) perfect, and one to several imperfect flowers in each spikelet; outer glumes thin, keeled, awnless; flowering glumes of thicker texture, obtuse, usually awned, sometimes truncate and obtuse; palet folded, with two prominent nerves.

1. *C. alba*, *Presl.* New Mexico and Arizona.
C. alba, var. *aristulata*, *Torr.* New Mexico and Arizona.
2. *C. cucullata*, *Bisch.* Texas.
3. *C. elegans*, *H. B. K.?* Texas and New Mexico.
4. *C. Floridana*, *Chap.* (Eustachys). Florida.
5. *C. glauca*, *Chap.* (Eustachys). Florida.
6. *C. petræa*, *Thurb.* (Eustachys petræa, *Desv.*). Florida.
7. *C. verticillata*, *Nutt.* Texas.

TRICHLORIS, *Fournier.*

Spikelets sessile in two rows on the rachis of long spikes which are crowded, or in approximate verticils, near the apex of the culm; like *Chloris* the spikelets have one (the lower) perfect, and from one to three imperfect flowers, the glumes of which are three-awned at the apex; outer glumes unequal, acute or the upper aristate; palet of the fertile flower narrow, hyaline, two-nerved.

1. *T. latifolia.?* Texas and New Mexico.
2. *T. pluriflora.?* Arizona.

GYMNOPOGON, *Beauv.*

Spikelets sessile and remotely alternate on long and filiform branches of the panicle, each with one, or rarely two perfect flowers and a bristle-like rudiment, or an awn-like pedicel; outer glumes long lanceolate, as long as the spikelet, nearly equal, keeled, acute; flowering glume cylindrical, involute, two toothed or lobed at the apex, and from the midrib a straight slender awn; palet included in its glume, narrow, two-keeled; glume of the imperfect flowers also terminated with a long awn.

1. *G. brevifolius*, *Trin.* Southern States.
2. *G. racemosus*, *Beauv.* New Jersey and southward.

SCHEDONNARDUS, *Steudel.*

Spikelets one-flowered, solitary at each joint of the slender triangular rachis of the paniculate spikes, and partly immersed in an excavation; the spikes alternate and distant; outer glumes acuminate, unequal, the longer equaling the flowering glume, which is linear-acuminate, and thickish at the keel; palet shorter and thinner.

1. *S. Texanus*, *Steudel* (*Lepturus paniculatus*, *Nutt.*). Illinois to Texas.

BOUTELOUA, *Lag.*

Spikes numerous in a racemose panicle or one terminal,; spikelets densely crowded in two rows on one side of the rhachis, each consisting of one perfect flower, and a stalked pedicel bearing empty glumes and one to three stiff awns; outer glumes unequal, acute, keeled, membranaceous; flowering glume broader, usually thicker, with three to five lobes, teeth, or awns at the apex; palet narrow, hyaline, entire or two-toothed, enfolded by its glume.

1. *B. aristidoides*, *H. B. K.* New Mexico and Arizona.
2. *B. Burkei*, *F. L. S.* Texas.
3. *B. eriopoda*, *Torr.* New Mexico to Arizona.
4. *B. foena*, *Torr.?* New Mexico to Arizona.
5. *B. hirsuta*, *Lagas.* Illinois to Rocky Mountains and Plains.
6. *B. Havardii*, *Vasey.* Texas.
7. *B. Humboldtiana*, *Gris.* New Mexico to Arizona.
8. *B. oligostachya*, *Torr.* Texas to Arizona.
B. oligostachya, var. *intermedia.* Texas to Arizona.
9. *B. polystachya*, *Benth.* Texas to Arizona.
B. polystachya, var. *major*, *Vasey.* Texas to Arizona.
10. *B. pusilla*, *Vasey.* New Mexico.
11. *B. racemosa*, *Lag.* (*B. curtipendula*, *Gr.*). Illinois to Texas and Arizona.
12. *B. Texana*, *S. W. ined.* Texas.
13. *B. trifida*, *Thurb.* Texas to Arizona.
14. *B. Rothrockii*, *Vasey.* Arizona.

ELEUSINE, *Gaert.*

Spikes two to five or more, digitate at the summit of the culm, sometimes a few scattering ones lower down; spikelets sessile and crowded along one side of the rhachis, two to six or more flowered, the uppermost flowers imperfect or rudimentary; outer glumes membranaceous, shorter than the spikelet; flowering glumes usually obtuse; palet folded, two-keeled.

1. *E. Indica*, *Gaert.* Yard-grass, Crab-grass. Extensively naturalized
E. Indica, var. *brachystachya.* On Ballast ground, Philadelphia.
2. *E. Ægyptiaca*, *Pers.* (*Dactyloctenium*, *Gaert.*). Southern States.
3. *E. corocana*, *Gaert.?* On Ballast ground, Philadelphia.

LEPTOCHLOA, *Beauv.*

Spikelets several (rarely one) flowered, perfect, sessile in two rows along one side of the slender, usually numerous spikes or branches of the panicle; outer glumes keeled, obtuse or acute, awnless, or mucronate; flowering glumes usually obtuse, prominently nerved, awnless; palet prominently two-nerved.

1. *L. mucronata*, *Kth.* Common.

BUCHLOË, *Engelm.*

Spikelets diceious, or rarely monœcious, heteromorphous.

Male plant.—Spikelets two to three flowered in short one-sided two-ranked spikes, of which there are two or three at the summit of the culm; spikes four to five lines long, composed of five or six closely approximated spikelets; outer glumes unequal, one-nerved, the lower one half as long as the flower above it, the upper shorter; flowering glumes and palelets of equal length, membranaceous, the flowering glume three-nerved, the palelet two-nerved.

Female plant.—Spikelets closely approximated in short capitate spikes, which are mostly near the ground, and partly inclosed in the bract-like sheaths of the upper leaves; spikelets one-flowered, all the upper glumes indurated and cohering at their bases with the thickened rachis, the lower glume of the lowest spikelet lanceolate with an herbaceous tip, or two to three cleft, thickened and adnate to the upper glume; the lower glumes of the other spikelets free, much smaller, membranaceous, ovate-lanceolate, acute, one-nerved, the flowering glume shorter, three-nerved, tricuspidate; palelet two-nerved.

1. *B. dactyloides*, *Engelm.* Plains, Texas to British America.

PAPPOPHORUM, *Schreb.*

Spikelets in a dense spike-like, or narrow and loose, panicle, with two to four approximate flowers, usually only the lowest perfect, the others male or rudimentary; outer glumes membranaceous, many-nerved, awnless; flowering glumes broader and thicker, convex on the back, pubescent, produced above into nine to thirteen straight, subulate awns; palelet smaller, two-keeled.

1. *P. boreale*, *Led.* ? Texas and Southwest.
2. *P. apertum*, *Munro.* Texas and Southwest.

COTTEA, *Kth.*

Flowers in a loose contracted panicle; spikelets six to nine flowered, of which the two or three lower are perfect and the upper male or neutral; outer glumes membranaceous, acute, convex on the back, prominently many-nerved, one to three toothed at the apex; rachis and base of flowers hairy; flowering glumes broad, convex on the back, somewhat five-lobed, nine to eleven awned, the awns straight and unequal; palelet two-keeled, bifid at apex.

1. *C. pappophoroides*, *Kth.* Texas and Southwest.

TRIODIA, *R. Br.*

Spikelets several to many flowered in a strict spike-like or an open spreading panicle, some of the upper flowers male or imperfect; outer glumes keeled, acute or acutish, awnless; flowering glumes imbricated

rounded on the back, at least below, hairy or smooth, three-nerved, either mucronate, three-toothed or three-lobed at the apex, or obscurely erose, often hardened and nerveless in fruit; palet broad, prominently two-keeled.

- ✓1. *T. acuminata*, *Benth.* (*Tricuspis acuminata*, *Munro*). Texas to Arizona.
2. *T. albescens*, *Benth.* (*Tricuspis albescens*, *Munro*). Texas to Arizona.
3. *T. ambigua*, *Benth.* (*Tricuspis ambigua*, *Chap.*). Southern States.
4. *T. avenacea*, *H. B. K.*
5. *T. mutica*, *Benth.* (*Tricuspis mutica*, *Torr.*). Texas to Arizona.
6. *T. pulchella*, *H. B. K.* Texas to Arizona.
7. *T. seslerioides*, *Benth.* (*Tricuspis seslerioides*, *Torr.*). Common.
8. *T. stricta*, *Benth.* (*Tricuspis stricta*, *Nutt.*). Texas.
9. *T. Texana*, *Benth.* (*Tricuspis Texana*, *Thurb.*). Texas.
10. *T. trinerviglumis*, *Benth.* (*Tricuspis trinerviglumis*, *Munro*). Texas.

DIPLACHNE, *Beauv.*

Spikelets many-flowered, narrow, sessile or nearly so, and distant on the long slender branches of the panicle, usually in two rows, but not regular as in *Leptochloa*; outer glumes keeled, acute, not awned; flowering glumes one to three nerved, with a thin or hyaline shortly two-lobed apex, the keel produced into a short point or awn between the lobes; palet thin, prominently two-nerved.

1. *D. dubia*, *Benth.* (*Leptochloa dubia*, *Nees*). Texas.
2. *D. fascicularis*, *Beauv.* (*Leptochloa fascicularis*, *Gray*). Common.
3. *D. imbricata*, *Benth.* (*Leptochloa imbricata*, *Thurb.*). Arizona.
4. *D. rigida*, *Benth.* (*Leptochloa rigida*, *Munro*). Texas.
5. *D. viscida*, *F. L. S.* Arizona.

TRIPLASIS, *Beauv.*

Panicle simple and scanty, partly included in the leaf-sheath; spikelets remotely two to five flowered; outer glumes much shorter than the flowers, membranaceous, one-nerved; flowering glumes two-lobed or two-cleft, its midnerve extended into an awn between the lobes, three-nerved, strongly fringed on the nerves; palet shorter, two-keeled, long ciliate on the keels.

1. *T. Americana*, *Beauv.* (*Uralepis cornuta*, *Nutt.*). South.
2. *T. purpurea*, *Chap.* (*Uralepis purpurea*, *Nutt.*). North and South.
3. *T. sparsiflora*, *Chap.* Florida.

EREMOCHLOE, *S. Watson.*

Panicle short and contracted, simple or nearly so; spikelets four-flowered, the two lower flowers neutral, the third flower perfect and

fertile, the uppermost reduced to a stipitate villous triple awn; outer glumes membranaceous, carinate, one-nerved, acute, glabrous, nearly equal; flowering glumes three-nerved, two-cleft to the middle, the nerves strongly villous, extended into awns, of which the middle one is longest; the lobes in the neutral flowers obtuse, in the perfect flower attenuate. Palets shorter, two-keeled, two-toothed at the apex.

1. *E. Bigelovii*, *S. W.* New Mexico.

2. *E. Kingii*, *S. W.* Nevada.

ARUNDO, *Linn.*

Tall grasses with an ample panicle, spikelets two to many flowered, the flowers rather distant, silky, villous at the base and with a conspicuous silky-bearded rhachis, all perfect; outer glumes narrow, unequal, glabrous, lanceolate, keeled, acute; flowering glumes, membranaceous, slender, awl-pointed; palets much shorter than the glumes, two-keeled, pubescent on the keels.

1. *A. Donax*, *Linn.* River banks, Mexican border.

PHRAGMITES, *Trin.*

Only differing from *Arundo* in the lowest flower of the spikelet being male only and glabrous.

1. *P. communis*, *Trin.* Common.

MONANTHOCHLÆ, *Engelm.*

Spikes very short, two to three flowered, diœcious, sessile, single or fascicled at the distant nodes of the culm, terminating short, leafy-bracted branches, almost hidden by and seeming like a continuation of them, very similar in the two sexes; outer glumes similar to the distichous, leafy bracts; flowering glumes linear, rigid, obtuse; palets hyaline, two-nerved, infolding the stamens or styles.

1. *M. littoralis*, *Engelm.* Near the coast, Florida, Texas, to California.

MUNROA, *Torr.*

Spikelets two or three together in small, sessile, leafy heads or clusters terminating the numerous fasciculate and lateral branches, and at the nodes, each about three-flowered, the upper flower imperfect; outer glumes shorter than the flowers, lanceolate, acute, hyaline, one-nerved; flowering glumes larger, herbaceous, rather rigid, three-nerved, entire or two-toothed, the central nerve excurrent in a mucro or short awn; palets hyaline, narrow, two-keeled, complicate.

1. *M. squarrosa*, *Torr.* Arid plains of the West.

LAMARCKIA, *Möench.*

Panicle short and dense, the spikelets one-sided on the crowded branches, fertile and sterile intermixed in small clusters; fertile spike-

lets short and two-flowered, the lower flower perfect, the upper one rudimentary and long-awned, outer glumes lanceolate-subulate, one-nerved, thin, about equaling the spikelet, flowering glume stalked, oblong, chartaceous, five-nerved, bifid, and emitting between the teeth a slender awn; sterile spikelets slender, with ten to twelve distant, broadly-obtuse, empty glumes above the two lower, much longer, linear, acute ones.

1. *L. aurea*, *Moench*. Introduced. California.

KOELERIA, *Pers.*

Spikelets three to five flowered, compressed, numerous in a dense spike-like cylindrical or interrupted panicle; outer glumes membranaceous, keeled, unequal, lanceolate, about as long as the spikelet, scarious on the margin; flowering glumes similar, more scarious or hyaline, rarely mucronate, the upper one usually smaller and imperfect; palet very thin, acutely two-keeled, two-toothed.

1. *K. cristata*, *Pers.* Common.

EATONIA, *Raf.*

Spikelets usually two-flowered and with an abortive rudiment or pedicel, numerous, in a contracted or slender panicle, very smooth; outer glumes unequal, the lower narrowly linear, keeled, one-nerved, the upper broadly obovate, shorter than the spikelet, three-nerved, not keeled, scarious margined; flowering glumes oblong, obtuse, compressed, chartaceous; palet narrow, hyaline.

1. *E. obtusata*, *Gr.* Common.
 2. *E. Pennsylvanica*, *Gr.* Common.
- E. Pennsylvanica*, var. *filiformis*, *Chap.* Florida.

DISSANTHELIUM, *Trin.*

Spikelets two to four flowered, all fertile, in a narrow panicle; outer glumes herbaceous, narrow and acute, keeled, the lower one-nerved, the upper three-nerved, both much longer than the flowers; flowering glumes ovate, obtuse or obtusish, obtusely keeled, three to five nerved, the outer nerves near the margin, scarious at the tip, pubescent especially on the marginal nerves and keel; palet narrow, strongly two-keeled, nearly equaling its glume.

1. *D. Californicum*, *Benth.* (*Stenochloa Californica*, *Nutt.*). California.

CATABROSA, *Beauv.*

Spikelets two to three flowered, in a loose panicle; outer glumes hyaline-membranaceous, shorter than the flowers, the lower short and narrow, the upper obovate, three-nerved, erosely dentate at the apex; flowering glumes membranaceous, obtuse, prominently three-nerved;

palet little shorter than its glume, prominently two-keeled. An aquatic grass.

1. *C. aquatica*, *Beaur.* Rocky Mountains.

ERAGROSTIS, *Beaur.*

Spikelets, several, usually many-flowered, pedicellate or sessile, in a loose and spreading, or narrow and clustered, panicle, the rhachis of the spikelet usually glabrous and articulate under the flowering glumes, but often tardily so and sometimes inarticulate. Outer empty glumes unequal and rather shorter than the flowering ones, keeled, one-nerved; flowering glumes obtuse or acute, unawned, three-nerved, the keel prominent, the lateral nerves sometimes very faint; palet shorter than the glume, with two prominent nerves or keels, often persisting after the glume and grain have fallen away.

1. *E. alba*, *Presl.* New Mexico and Arizona.
2. *E. Brownei*, *Nees.*? Florida.
3. *E. capillaris*, *Linn.* Common.
4. *E. ciliaris*, *Linn.* Florida to Texas.
5. *E. conferta*, *Trin.* Florida to Texas.
6. *E. curtipedicellata*, *Buckl.* Texas.
7. *E. Frankii*, *Meyer.* Common.
8. *E. Mexicana*, *Link.*? Texas and New Mexico.
9. *E. Neo Mexicana*, *Vasey.*? New Mexico.
10. *E. nitida*, *Chap.* South Carolina to Florida.
11. *E. oxylepis*, *Torr.* Texas, Arkansas, and New Mexico.
12. *E. pectinacea*, *Michx.* Common.
E. pectinacea, var. *refracta*, *Chap.* Southern States.
E. pectinacea, var. *spectabilis*, *Gray.* Common.
13. *E. pilifera*, *Scheele.* New Mexico to California.
14. *E. pilosa*, *Linn.* Introduced.
15. *E. poaeoides*, *Beaur.* Introduced. Common.
E. poaeoides, var. *megastachya*, *Gr.* Introduced. Common.
16. *E. Purshii*, *Schrad.* Common.
17. *E. reptans*, *Nees.* Common.
18. *E. tenuis*, *Gray.* Common.
19. *E. lugens*, *Nees.*? Texas and New Mexico.
20. *E. limbata*, *Fourn.*? Texas and New Mexico.

MELICA, *Linn.*

Panicle narrow and strict, or lax and spreading, or racemose and secund; spikelets two to many flowered, usually convolute around each other, the upper one to three smaller and imperfect; outer glumes membranaceous or hyaline, acute or obtuse, awnless, the lower three to five nerved, the upper sometimes seven to nine nerved, the lateral nerves vanishing within the scarious margin. Flowers somewhat distant;

flowering glumes of thicker texture, becoming somewhat coriaceous, rounded or flattish on the back, five to nine nerved, the lateral nerves vanishing below the apex, the central one sometimes ending in a point or an awn; palelets shorter than their glumes, two-keeled, ciliate on the keels and apex.

1. *M. acuminata*, *Bolander*. California and Oregon.
2. *M. aristata*, *Thurber*. California and Oregon.
3. *M. Brandegii*, *Vasey*. Colorado.
4. *M. bromoides*, *Gray*. California.
5. *M. bulbosa*, *Geyer*. California and Rocky Mountains.
M. bulbosa, var. ? Oregon.
6. *M. fugax*, *Bol.* California and Oregon.
7. *M. Harfordii*, *Bol.* California and Oregon.
8. *M. Hallii*, *Vasey*. Rocky Mountains.
9. *M. imperfecta*, *Trin.* California and Oregon.
M. imperfecta, var. *inflata*, *Bol.* California and Oregon.
M. imperfecta, var. *flexuosa*, *Bol.* California and Oregon.
10. *M. mutica*, *Walt.* Common East.
M. mutica, var. *diffusa*, *Gray*. Texas and Southwest.
M. mutica, var. *glabra*, *Gray*. South.
M. mutica, var. *pauciflora*, *Porter*. Mountains of New Mexico and Colorado.
11. *M. stricta*, *Bolander*. California.

DIABRHENA, *Raf.*

Panicle narrow and loose; spikelets three to five flowered, the one or two uppermost imperfect; outer glumes unequal, shorter than the flowers, coriaceous, the lower narrow, acute, keeled, one-nerved, the upper larger, ovate, five-nerved, keeled, acute, or mucronate; flowering glumes broadly ovate, rigidly coriaceous, rounded on the back, three-nerved, the nerves prominent and uniting at the apex in a strong cuspidate or awl-shaped tip; palelets shorter than their glumes, rigid, broad, two-keeled. Stamens 2. Grain very large, rather longer than the flower, oblong, obtusely pointed.

1. *D. Americana*, *Beauv.* Ohio, Illinois, and southward.

STREPTOGYNE, *Beauv.*

Spikelets one to four flowered, cylindrical, shortly pedicellate, in unilateral subsessile spikes, the lower flowers perfect; outer glumes unequal, the outer one small, the upper longer, wider, convolute, many nerved, acute; flowering glumes longer, more rigid, closely convolute, terminated in a straight, slender awn, upper flowers gradually smaller and empty; palelet narrow, membranaceous, two-keeled, bifid, closely inclosed in its glume.

1. *S. crinita*, *Beauv.* This is credited to the Southern United States by Grisebach, but we have not seen it.

PLEUROPOGON, *R. Br.*

Spikelets in a long, simple raceme, many-flowered, long, compressed; the rachis smooth, zigzag, disarticulating under each flower at maturity; outer glumes shorter than the lowest flowers, unequal, membranaceous, the lower one-nerved, the upper three-nerved, awnless; flowering glumes much longer, narrow, herbaceous to subcoriaceous, with a smooth rounded callus at the base, prominently seven-nerved, truncate or bifid at the apex, the midnerve terminating in a straight awn; palet nearly as long as its glume, strongly two-nerved, two-keeled.

1. *P. Californicum*, *Benth.* (*Lophochlæna Californica*, *Gr.*). California.
2. *P. refractum*, *Benth.* (*Lophochlæna refracta*, *Gr.*). California.
3. *P. Sabinii*, *Brown.* Melville Island, Arctic America.

UNIOLA, *Linn.*

Spikelets closely many-flowered, very flat and two-edged, one or more of the lowest flowers neutral and consisting only of an empty glume; glumes lanceolate, complicate-keeled, rigid or coriaceous, the flowering ones larger, many-nerved, usually acute or pointed, entire; palet rigid, two-keeled, the keels narrowly winged. Stamens 1 to 3.

1. *U. gracilis*, *Michx.* Common.
2. *U. latifolia*, *Michx.* Common.
3. *U. nitida*, *Baldw.* Florida.
4. *U. paniculata*, *Linn.* Virginia to Florida.

DISTICHLIS, *Raf.*

Spikelets dioecious, many-flowered, compressed, crowded in a dense spicate or capitate, or rather open panicle; outer glumes herbaceous, narrow, keeled, acute, shorter than the flowers; flowering glumes rigidly membranaceous or subcoriaceous, keeled, many-nerved, acute; palet complicate, two-keeled, the keels narrowly winged. The pistillate flowers are more rigid than the staminate, styles long with stigmas exerted from the top of the palet.

1. *D. maritima*, *Raf.* (*Brizopyrum spicatum*, *Hook.*). Sea-shore and interior saline grounds.

DACTYLIS, *Linn.*

Spikelets three to five flowered, in dense fascicles or glomerate clusters at the ends of the short branches of a close, short panicle. Outer glumes unequal, lanceolate, acute, rigid, with hyaline margins, keeled, one to three nerved; flowering glumes larger, more rigid, keeled, five-nerved, mucronate or bristle-pointed, ciliate on the keel; palet little shorter than its glume, narrower and thinner, two-keeled.

1. *D. glomerata*, *Linn.* Orchard grass. Cultivated.

BRIZA, *Linn.*

Spikelets many-flowered, paniculate, ovate or roundish, flattish-tumid. Outer glumes unequal, persistent, three to five nerved, scarious margined, concave or ventricose; flowering glumes, imbricated, appressed or spreading, broad or roundish, ventricose, often heart-shaped at the base, five to many nerved; palet much shorter than its glume, hyaline, on the margin two-nerved.

1. *B. media*, *Linn.* Naturalized in some places.
2. *B. minor*, *Linn.* Naturalized in some places.

POA, *Linn.*

Spikelets somewhat compressed, usually two to five flowered, in a narrow or loose and spreading panicle, the rhachis between the flowers glabrous or sometimes hairy, the flowers generally perfect, in a few species diœcious; outer glumes commonly shorter than the flowers, membranaceous, keeled, obtuse or acute, one to three nerved, not awned; flowering glumes membranaceous, obtuse or acute, five or rarely seven nerved, the intermediate nerves frequently obscure, often scarious at the apex and margins, smooth or pubescent, often with a few loose or webby hairs at the base; palet about as long as the flowering glumes, prominently two-nerved or two-keeled.

1. *P. abbreviata*, *R. Br.* Oregon to the Arctic coast.
2. *P. alpina*, *Linn.* Mountains of New England and Rocky Mountains.
P. alpina, var. *minor*. Rocky Mountains.
P. alpina, var. *purpurascens*, *Vasey* (*Poa purpurascens*, *Vasey*).
Oregon and Rocky Mountains.
3. *P. alsodes*, *Gr.* New York, New England, and Alleghany Mountains.
P. alsodes, var. *occidentalis*, *Vasey*. Rocky Mountains to Oregon.
4. *P. andina*, *Nutt.* Rocky Mountain region.
P. andina, var. ———. Rocky Mountain region.
5. *P. angustata*, *R. Br.* Melville Island, Arctic Ocean.
6. *P. annua*, *Linn.* Common.
P. annua, var. *stricta* *Vasey*. Texas, New Mexico, and Arizona.
7. *P. arachnifera*, *Torr.* Texas.
8. *P. arctica*, *R. Br.* Rocky Mountains to Alaska.
9. *P. Bolanderi*, *Vasey*. California to Oregon.
10. *P. brevifolia*, *Muhl.* Principally Atlantic States.
11. *P. cæsia*, *Sm.* Mountains of New England and Rocky Mountains.
P. cæsia, var. *stricta*, *Gr.* Mountains of New England and Rocky Mountains.
12. *P. Californica*, (*Sclerochloa Californica*, *Munro*). California to Oregon.
13. *P. compressa*, *Linn.* Common.
14. *P. debilis*, *Torr.* New York, New England, and northward.
15. *P. Douglasii*, *Nees*. California.
16. *P. Eatoni*, *S. W.* Utah and Nevada.

17. *P. flexuosa*, *Muhl.* Atlantic and Western States.
P. flexuosa, var. *occidentalis*, *Vasey*, ined. Colorado to Oregon.
18. *P. glumaris*, *Trin.* Alaska to St. Lawrence River.
19. *P. gracillima*, *Vasey*, ined. Oregon and Washington Territory.
20. *P. Kelloggii*, *Vasey*, ined. California.
21. *P. Kingii*, *S. Watson.* Nevada.
21. *P. laxa*, *Hænke.* Mountains of New England and Rocky Mountains.
22. *P. leptocoma*, *Trin.* Alaska.
23. *P. nemoralis*, *Linn.* Rocky Mountains.
24. *P. Nevadensis*, *Vasey.* Utah and Nevada.
25. *P. pratensis*, *Linn.* Extensively cultivated and indigenous in mountain districts.
26. *P. pauciflora*, *Benth.* (*Atropis pauciflora*, *Thurb.*). California.
27. *P. pulchella*, *Vasey.* Oregon and Washington Territory.
28. *P. serotina*, *Ehrh.* Chiefly east of the Mississippi.
P. serotina, var. *gracilis*, *Vasey.* Rocky Mountains.
P. serotina, var. *flexicaulis*, *Vasey.* Rocky Mountains.
29. *P. scabrella*, *Benth.* (*Atropis scabrella*, *Thurb.*). California.
30. *P. stenantha*, *Trin.* Oregon to Alaska.
P. stenantha, var. *brevifolia*, *Vasey.* Oregon.
31. *P. sylvestris*, *Gray.* New England to Texas.
32. *P. tenuifolia*, *Nutt.* Rocky Mountains.
33. *P. trivialis*, *Linn.* Indigenous in Eastern and Middle States.
P. trivialis, var. *Californica*, *Vasey.* California and Oregon.
P. trivialis, var. *occidentalis*, *Vasey.* New Mexico.
34. *P. Wardii*, *Vasey.* Utah.

GRAPHEPHORUM, *Desv.*

Spikelets two to five flowered, rather terete, in a narrow or loose panicle. Outer glumes membranaceous, mostly nearly equaling the rather remote flowers, membranaceous or subscarious, keeled, three to five nerved; flowering glumes membranaceous to subcoriaceous, rounded on the back or obscurely keeled, faintly or strongly nerved, entire or denticulate, mostly acute, or sometimes mucronate; a tuft of villous hairs at the base of each flower; palea narrow, as long as its glume two-nerved or two-keeled.

1. *G. festucaceum*, *Gray.* British America to Alaska.
2. *G. Fischeri*, *Gray*, (*Dupontia Fischeri*, *R. Br.*). Melville Island.
G. Fischeri, var. *psilosantha*, *Gray.*
3. *G. flexuosa*, *Thurb.* Western plains.
4. *G. fulvum*, *Gray* (*Colpodium fulvum*, *Led.*). Arctic America.
5. *G. melicoides*, *Beauv.* New England, New York, Michigan to Canada.
G. melicoides, var. *major*, *Gray.* Michigan.
G. melicoides, var. *Californica*, *Vasey*, (*Trisetum subspicatum*, var. *muticum*, *Thurb.*). California.
6. *G. Wolfii*, *Vasey* (*Trisetum Wolfii*, *Vasey*). Rocky Mountains.

This is a very anomalous genus, a portion being closely related to *Trisetum*, and a portion should probably be carried into other genera.

GLYCERIA, *R. Br.*

Spikelets terete or flattish, several to many flowered, in a narrow or diffuse panicle, the rhachis smooth and readily disarticulating between the flowers; outer glumes shorter than the flowers, unequal, membranaceous, one to three nerved, unawned; flowering glumes membranaceous to subcoriaceous, obtuse, awnless, more or less hyaline and denticulate at the apex, rounded (never keeled) on the back, five to nine nerved, the nerves separate and all vanishing before reaching the apex; palet about as long as its glume, two-keeled, entire or bifid at the apex.

1. *G. acutiflora*, *Torr.* Maine to Penn.
2. *G. aquatica*, *Sm.*, var. *Americana*, *Vasey.* Common.
3. *G. distans*, *Wahl.* Common.
G. var. airoides, (*G. airoides*, *Nutt.*). Rocky Mountains and Plains.
4. *G. maritima*, *Wahl.* Near the coast.
5. *G. procumbens*, *Sm.* California coast, and Ballast ground, Philadelphia.
6. *G. elongata*, *Trin.* New England and Michigan.
7. *G. fluitans*, *R. Br.* Common.
8. *G. Lemmoni*, *Vasey.* Alkaline soils, California and Nevada.
9. *G. nervata*, *Trin.* Common.
10. *G. obtusa*, *Trin.* Near the Atlantic coast.
11. *G. pallida*, *Trin.* Virginia and northward.
12. *G. pauciflora*, *Presl.* Rocky Mountains and Pacific coast.

FESTUCA, *Linn.*

Spikelets three to many flowered, variously paniced, pedicellate, rhachis of the spikelets not hairy; outer glumes unequal, shorter than the flowers, the lower, one nerved and the upper, three nerved, narrow, keeled, acute; flowering glumes membranaceous, chartaceous, or subcoriaceous, narrow, rounded on the back (not keeled), more or less distinctly three to five nerved, acute or tapering into a straight awn, rarely obtusish; palet narrow, flat, prominently two-nerved or two-keeled.

1. *F. amethystina*, *Linn.* California and Oregon.
2. *F. duriuscula*, *Linn.* Sea-coast and sandy plains.
3. *F. gracillima*, *Hook.* California and Oregon.
4. *F. Jonesii*, *Vasey.* Utah and Nevada.
5. *F. microstachys*, *Nutt.* California and Oregon.
6. *F. macrostachya*, *Torr.* in P. R. R. Reports, not recently collected.
7. *F. Myurus*, *Linn.* Naturalized, common.
8. *F. nutans*, *Willd.* Common.
F. nutans, var. *major*, *Vasey.* Illinois and westward.

9. *F. occidentalis*, *Hook.* California and Oregon.
10. *F. ovina*, *Linn.* Indigenous and extensively naturalized.
F. ovina, var. *brevifolia*, *S. Wats.* Rocky Mountains and northward.
F. parviflora, *Ell.* South Carolina.
F. pauciflora, *Thunb.?* California *vide* Thurber.
11. *F. pratensis*, *Linn.* Introduced and naturalized.
12. *F. Richardsonii*, *Hook.* Arctic coast.
13. *F. rigida*, *Kth.* (*Scleropoa rigida*, *Gris.*). On Ballast ground, New York.
14. *F. rubra*, *Linn.* Introduced, also indigenous.
F. rubra, var. *Baikalensis*. Alaska.
F. rubra, var. *littoralis*, *Vasey.* Oregon.
15. *F. scabrella*, *Torr.* White Mountains, Rocky Mountains to Oregon.
16. *F. sciurea*, *Nutt.?* Texas, Arkansas.
17. *F. spectabilis*, *Jan.* On Ballast ground, Philadelphia.
18. *F. tenella*, *Willd.* Common.
F. tenella, var. *aristulata*, *Torr.* Texas and westward.

BROMUS, *Linn.*

Spikelets five to many flowered, in a dense or lax or diffuse panicle, subterete or compressed, the rhachis between the flowers glabrous; outer glumes more or less unequal, shorter than the lowest flower, membranaceous, acute, awnless or short mucronate, one to nine nerved; flowering glumes membranaceous to rigid and subcoriaceous, rounded on the back or compressed and keeled, five to nine nerved, acute, or awned from below the mostly two-cleft apex; palet rather shorter than the glumes, two-keeled, the keels rigid and ciliate; grain adhering to the palet.

1. *B. Aleutensis*, *Trin.* Alaska.
2. *B. asper*, *Linn.* Sparingly naturalized.
3. *B. breviaristatus*, *Thurb.* Rocky Mountains to California.
4. *B. carinatus*, *H. & A.?* California.
5. *B. ciliatus*, *Linn.* Common.
B. ciliatus, var. *purgans*, *Gray.* Common.
B. ciliatus, var. *minor*, *Munro.* Texas and New Mexico.
6. *B. depauperatus*, *Presl.* Nootka Sound.
7. *B. erectus*, *Huds.* Sparingly naturalized.
8. *B. grandiflorus*, *Thurb.* California and Oregon.
9. *B. Kalmii*, *Gr.* Northern and Rocky Mountains.
B. Kalmii, var. *aristulata*, *Torr.* Texas and New Mexico.
10. *B. maximus*, *Desf.* Sparingly naturalized in California.
11. *B. mollis*, *Linn.* Naturalized.
12. *B. racemosus*, *Linn.* Naturalized.
13. *B. rubens*, *Linn.* Sparingly naturalized.
14. *B. secalinus*, *Linn.* Extensively naturalized.
15. *B. sterilis*, *Linn.* Sparingly naturalized.

16. *B. squarrosus*, *Linn.* Sparingly naturalized.
17. *B. subulatus*, *Gris.*? Alaska.
18. *B. tectorum*, *Linn.* Sparingly naturalized.
19. *B. unioloides*, *Willd.* Texas to Arizona.

LOLIUM, *Linn.*

Spikelets several-flowered, solitary on each joint of the continuous rachis of the simple spike, placed edgewise against the rachis, the glume wanting on the inside, the outer empty glume as long as or longer than the spikelet; flowering glumes rounded on the back, not keeled; palet shorter, two-keeled.

1. *L. perenne*, *Linn.* Naturalized and cultivated.
2. *L. temulentum*, *Linn.* Sparingly found in wheat fields.
3. *L. arvense*, *With.* Sparingly naturalized.

AGROPYRUM, *Beauv.* (*Triticum*, in part, of authors).

Spikelets several-flowered (three to nine or more), compressed, alternately sessile on the continuous or slightly notched rachis of the simple spike, and with the side against the rachis; outer glumes nearly equal and opposite, membranaceous or herbaceous, one to three nerved, scarcely keeled, tapering to a point or awned; flowering glumes similar to the outer ones, rounded on the back, three to seven nerved, pointed or awned from the apex; palet nearly as long as its glume, the two prominent nerves almost marginal, scabrous ciliate.

1. *A. ægilopoides*, *Turcz.* Rocky Mountains.
2. *A. caninum*, *R. & S.* (*Triticum caninum*, *L.*). Common.
3. *A. dasystachyum*, (*Triticum dasystachyum*, *Gr.*). Rocky Mountains to Alaska.
4. *A. repens*, *Beauv.* (*Triticum repens*, *Linn.*). Extensively naturalized.
A. repens, var. *tenerum*, *Vasey*. Rocky Mountains.
A. repens, var. *compactum*, *Vasey*. Rocky Mountains.
A. repens, var. *acutum*, *Vasey*. Rocky Mountains.
5. *A. glaucum*, *R. & S.* (*Triticum repens*, var. *glaucum*, *Vasey*). Rocky Mountains.
6. *A. strigosum*, (*Triticum strigosum*, *Kth.*). Rocky Mountains.
7. *A. violaceum*, (*Triticum violaceum*, *Hornm.*). White and Rocky Mountains.

LEPTURUS, *R. Br.*

Spikelets one to two flowered, single and sessile at each joint of the alternately excavated rachis of the simple spike; outer glumes persistent, rigid, narrow, acute; flowering glumes much shorter, thin, hyaline; palet hyaline, two-nerved.

1. *L. Bolanderi*, *Thurb.* California.
2. *L. incurvatus*, *Trin.* On Ballast ground.

HORDEUM, *Linn.*

Inflorescence a dense spike, with two or three spikelets at each joint of the notched rhachis; spikelets one-flowered, with an awl-shaped rudiment of a second flower, the central spikelet of the cluster perfect and sessile, the lateral ones short-stalked and imperfect or abortive; outer glumes side by side, two to each spikelet or six at each joint, slender and awn-pointed or bristle form; flowering glume herbaceous, shorter, oblong or lanceolate, rounded on the back, not keeled, five-nerved, acute or long awned; palet shorter, two-keeled.

1. *H. nodosum*, *Linn.* Introduced along the coast.
2. *H. pusillum*, *Nutt.* Saline plains of the interior.
3. *H. murinum*, *Linn.* Naturalized in California.
4. *H. jubatum*, *Linn.* Common North and West.

ELYMUS, *Linn.*

Spikelets two to four at each joint of the rhachis of the simple stout spike, sessile, one to six flowered; outer glumes two for each spikelet, nearly side by side in its front, forming a kind of involucre for the cluster, narrow, rigid, one to three nerved, acuminate or awned; flowering glumes herbaceous, rather shorter, oblong or lanceolate, rounded on the back, not keeled, acute or awned; palet shorter than its glume, two-keeled.

1. *E. arenarius*, *Linn.*?
2. *E. Canadensis*, *Linn.* Common.
E. Canadensis, var. *glaucofolius*, *Gray.* Common.
3. *E. condensatus*, *Presl.* Rocky Mountains to the Pacific.
E. condensatus, var. *triticoideus*, *Thurb.* Rocky Mountains to the Pacific.
4. *E. dasystachys*, *Trin.* Oregon and northwest coast.
5. *E. Macounii*, *Vasey.* Saskatchewan plains.
6. *E. mollis*, *Trin.* Sea-shore, Atlantic and Pacific.
7. *E. Sibiricus*, *Linn.* White Mountains to Rocky Mountains.
8. *E. Sitanion*, *Schultz* (*Sitanion*, *Raf.*). Rocky Mountains.
9. *E. striatus*, *Willd.* Common.
E. striatus, var. *villosus*, *Gr.* Common.
10. *E. Virginicus*, *Linn.* Common.

ASPRELLA, *Willd.* (*Gymnostichum* *Schr.*).

Spikelets two to three, or sometimes solitary at each joint of the rhachis, raised on a very short callous pedicel, loosely two to four flowered (when solitary flatwise on the rhachis), in a loose terminal spike. Empty glumes none, or small, awn-like, and deciduous; flowering glumes, narrow, lanceolate, rounded on the back, three to five nerved above, long-awned from the apex; palet two-keeled.

1. *A. Californica*, *Benth.* (*Gymnostichum Californicum*, *Bol.*). California.
2. *A. hystrix*, *Willd.* (*G. hystrix*, *Schr.*). Eastern United States.

ARUNDINARIA, *Mich.*

Spikelets many-flowered, flattened, racemose or paniculate, the uppermost flowers imperfect; outer glumes very small, membranaceous, the upper one larger; flowering glumes much larger, membranaceo-herbaceous, convex on the back, not keeled, many-nerved, acuminate, mucronate or bristle-pointed; palea shorter than its glume, prominently 3-keeled.

1. *A. macrosperma*, *Michx.* Southern States.
2. *A. tecta*, *Muhl.* Maryland, Illinois, and south.

Whole number of genera	114
Whole number of species	589



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